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**A longitudinal study  
mapping changes in explicit and implicit  
measures  
of gambling behaviour**

Richard Cutter

PhD

2016



**A longitudinal study  
mapping changes in explicit and implicit  
measures  
of gambling behaviour**

**Richard Cutter**

This thesis is submitted in partial fulfilment of the requirements of University of Northumbria at  
Newcastle for the degree of Doctor of Philosophy

Research undertaken in the Faculty of Health & Life Sciences.

Funded by the Responsible Gambling Trust

March 2016



**Declaration**

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved. Approval has been sought and granted by the Health & Life Sciences Faculty Ethics Committee on 09/02/2011.

I declare that the word count of this Thesis is 79,266 words.

Name: Richard Cutter

Signature:

Date:



## **Abstract**

Gambling is a popular activity, both globally and in the UK, with the majority of adults engaging in some degree of gambling behaviour. Contemporary views of gambling behaviour, addiction and behaviour change suggest that such behaviours move along a continuum and are subject to a variety of influences. Theories such as dual processing have highlighted the effects of implicit mechanisms on changing problem behaviours.

In a longitudinal mixed methods design, a group of sixty regular gamblers were interviewed and tested at three-month intervals for up to two years. Data was gathered via semi-structured interviews, explicit self-report questionnaires (PGSI, Fallacious Beliefs, Dissociation) and implicit tasks (Gambling Stroop Task, Roulette MouseTracker Task). From the first session data levels of problem gambling (PGSI) were predicted by elements of each type of data collected (Self-reported gambling behaviours, MouseTracker and interview content analysed by LIWC2007). The same measures were analysed as potential predictors of change in PGSI (N41), but found no significant relationships. A quantitative analysis of interview data revealed measurable change in gamblers' narratives (N12) when comparing interviews from low scoring PGSI periods to interviews during high scoring PGSI periods. Further in-depth IPA analysis (N12) identified six main themes including; external influence, conflict, self-identity, organisation and change.

The findings support concepts of dual processing theory, demonstrating that a variety of methods are a stronger predictor of change than any one. Gambling behaviour as a multifaceted construct, which relies on individual self-concept alongside unconscious processes, held in place by gamblers' narratives which adhere to a modern acceptance of gambling behaviour. The resulting conflict appears to sustain problem gambling for many regular gamblers, rather than allowing them either an acceptable gambling identity or a social view that assists their cessation.

Suggested applications of the findings require an equally multi-faceted approach, exploring the psychological processes involved and helping both the individual and the society around them to develop a new narrative for gamblers.





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I declare that the work presented in this thesis is entirely my own.

Richard Cutter

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# Chapter One: Introduction

## 1.1 Problem gambling: Setting the scene

The global gambling industry has experienced significant growth in recent years. The Global Gaming Report showed gaming revenue in 2014 was in excess of \$450 billion, a growth of over 3% on the previous year (Graham, 2015). The E.U. Commission estimates annual revenues in Europe were over €84.9 billion, with annual increases of around 3% (EU, 2015 online). In the UK, gambling is an increasingly popular leisure activity, with an estimated 73% of the adult population taking part in some form of gambling in 2010 (Wardle et al, 2011), an increase from 68% in the previous British Gambling Prevalence Survey conducted in 2007. Whilst the majority of those engaging in gambling activities have no problems arising from their gambling, it is estimated that between 250,000 to almost 600,000 adults may be currently experiencing problem levels of gambling behaviour in the UK (Wardle et al., 2011; Wardle, 2007), estimated to be in line with those for the global adult population (ranging from 0.5% to 7.6%, the average rate being 2.3%; (Williams, Volberg, & Stevens, 2012). Furthermore it is estimated that between 10 and 17 further people are directly affected by each problem gambler, which equates to 4-16% of the UK population (Rogers, 2013).

Research into loss of control of gambling behaviour has been conducted for several decades. During that time an analysis of the British Gambling Prevalence Survey 2007 concluded that future research in gambling should examine longitudinal gambling behaviour and multiple measures of gambling involvement (LaPlante, Nelson, LaBrie, & Shaffer, 2011). The recent view of problem gambling behaviour is that it lies on a continuum, with gamblers moving into and out

of problematic phases of addiction (Cox, Enns, & Michaud, 2004). It has also been noted in gambling research that there has been a distinct lack of qualitative research that has examined problem gambling in the context of talking to the gambler in order to understand problem behaviour (Wood & Griffiths, 2007).

Traditionally self-report measures have been popular in psychological research, but open to the question of reliability in the participants' 'honest' responses. This is particularly the case when one considers gambling. A key hallmark of problem gambling is that gamblers, like other addicts, do not want to admit they have a problem and often lie about their gambling behaviour (Heiskanen, 2012; Locke, Shilkret, Everett, & Petry, 2013; Weinstock, Massura, & Petry, 2012). In an ideal world, a method capable of identifying problem gamblers without asking them directly or relying on self-reported behaviour alone would clearly be a step forward.

Addiction epitomises the complexity of hard to maintain behaviour change and in recent years gambling addiction has specifically been identified as key to a complete understanding of addiction and behaviour change (Association, 2013; Orford, 2001). A variety of complex methods and theories have emerged in attempts to give a holistic understanding of the forces acting on an individual's behaviour. Rather than continually diverging towards opposing theoretical standpoints one of the aims of this thesis is to explore coherence between different methods and theoretical traditions which may offer a practical understanding of these issues.

This thesis has two primary goals. Firstly, it aims to employ multiple methods of assessing problem gambling amongst a sample of regular gamblers and secondly, it aims to examine change within that sample over a period of two years, via repeated sessions at three-month intervals. The remaining part of this introductory chapter will review some of the key theories regarding gambling, addiction and behaviour change. It will also explain some of the different methodological approaches to their measurement, setting the stage for the methods and findings reported in the remainder of the thesis.

### 1.1.1 Contemporary views of addiction

To begin to understand how problem gambling behaviour fits within a modern concept of addiction there are some issues with understanding addiction *per se* that need to be considered. This section will review key theories and approaches relevant to the current research, without being an exhaustive account of literature in the area. One very recent definition of addiction comes quite explicitly from a disease/biological approach.

“Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviours. Addiction is characterized by inability to consistently abstain, impairment in behavioural control, craving, diminished recognition of significant problems with one’s behaviours and interpersonal relationships, and a dysfunctional emotional response. Like other chronic diseases, addiction often involves cycles of relapse and remission. Without treatment or engagement in recovery activities, addiction is progressive and can result in disability or premature death.”

American Society for Addiction Medicine (<http://www.asam.org/for-the-public/definition-of-addiction>, 03/09/2014)

There is much data from animal studies that might support the disease model of addiction. B.F. Skinner’s early behavioural experiments involved individual rats, placed into boxes, and presented with levers that would enable self-administration of food and/or drugs. This often led to the rejection of food in favour of the drug, eventually culminating in fatal self-administration (Skinner, 1969). However, later approaches to animal models revealed a more complex interaction that cannot be explained only by the medical biological effects of the drugs being administered (Alexander, Beyerstein, Hadaway, & Coombs, 1981; Alexander, Coombs, & Hadaway, 1978). When rats were placed in a more realistic social setting, involving a colony of other rats with a variety of activities and options as behavioural outlets, the rats did not behave in the same way, more often rejecting the consumption of drugs and instead engaging in other socially rewarding activities. This brings the role of the social element and the availability of alternate choices and behaviours and how they contribute to successful abstinence to the forefront



of addiction theory. Gorski (1996) in evaluating the disease concept specifically when applied to alcoholism, acknowledged evidence that biomedical processes take place amongst users of addictive substances, causing biological reinforcement and adaptation of reward systems. This leads to changes in the brain's reward mechanisms and physiological symptoms which can be interpreted as a medical condition. However, Gorski also suggested that a reframing of addiction from a purely physiological disease, to a broader concept bio psychosocial model is a positive move in defining addiction.

The biological approach which leads to the medical model of addiction focuses purely on brain function prior to, during, and after drug use. Some factors are believed to be genetic, predisposing individuals to addiction (Crabbe, 2002) and other changes are believed to take place due to consumption of substances which alter brain function and response, leading to changes in behaviour (Kalivas & O'Brien, 2008). In recent years there has been much criticism of the medical model of addiction, largely originating from psychological research in the area. Questions can also be posed to a disease model of addiction from the social domain. For instance, if addictive behaviour is attributed to a medical condition, it raises questions as to why addicts can find themselves punished as criminals for enacting the symptoms which form part of the definition of the disease. These blurred lines between medical definitions and social responses to addictive behaviour require a more thorough understanding of the concept of addiction (Kurti & Dallery, 2012).

Several contemporary psychological and sociological approaches have challenged the disease model and suggest instead that addiction is a consequence of a complex interaction between individual differences, cognitive and biological mechanisms and the social context in which one finds themselves (Heyman, 2009; Orford, 2012). To highlight some of the key issues that support this, there is evidence that suggests drug addiction can vary dramatically in a population depending on the date of one's birth. For example in the USA, it has been reported that people born between 1917 and 1936 were thirteen times less likely to develop a drug addiction than those born between 1952 and 1963, a difference that is interpreted as due to wider socio-demographic factors, rather than individual predisposition to addiction due to biological factors

(Robins & Regier, 1991). Other socio-demographic factors such as average income in the area someone lives is also found to be predictive of developing a drug addiction (Brownsberger, 1997).

In a longitudinal study of randomly sampled Vietnam veterans assessing pre, during, and post tour narcotics use, it was found that prior to arriving in Vietnam less than 1% of the sample had ever been addicted to narcotics. However, during their time in Vietnam, approximately 50% of the sample had used narcotics, with 20% reporting addiction to narcotics. Of particular interest is that on return to the US the reported levels of narcotic use and addiction returned to pre-tour levels. One interpretation of this acute period of narcotic use and addiction is that the environmental and social variables that mediate consumption were distinctly different during the period in Vietnam, and this interpretation offers a viable alternative to the proposition that addicted levels of drug use may be mainly due to a medical or biological predilection (Robins, Heltzer & Davis, 1975). Based on data from the National Comorbidity Survey in the US it has been suggested that there are extremely high rates of spontaneous recovery amongst addicts, with recovery from addiction ultimately more likely than continued addiction to a fatal end. Without any medical intervention approximately 80% of addicts reach recovery without any medical or professional intervention (Anthony & Helzer, 1991). Davies (1998) also refers to the difficulties in labelling addiction as a disease disorder, when much of contemporary social views surrounding addiction involve an aspect of free will being engaged by the addict and that in many ways they are regarded as having a weakness of will, not a disease. Davies examines some of the key colloquial common social considerations regarding addiction, and the use of phrases such as ‘I can’t’ which is applied to the inability to control Parkinson’s disease tremors on one end of the scale, and in response to an unwanted party invite at the other. When an addict uses ‘I can’t’ in response to the question ‘why don’t you stop?’ are they verbalising the addictive uncontrollable compulsion that prevents such action, or simply a preference to not stop using, or an inability to consider or want to stop? It is argued by Heyman (2009) that if addiction is purely a disease of the brain, then it should not be influenced in this way by social determinants. Whilst brain changes may take place during substance use, or addictive behaviour, it clearly does not reveal the complete picture of addiction.

Key ideas that have developed from a broader definition of addiction include ‘melioration’, a concept of how people match their choices regarding reward to either immediate or delayed gratification, specifically when choosing a short term reward over a larger more beneficial long term one (Herrnstein & Prelec, 1992). According to Herrnstein’s matching law, people match their levels of behaviour to the levels of reinforcement received for that behaviour (Herrnstein, 1970). Herrnstein and Prelec also use the term ‘bookkeeping’ to refer to how this matching behaviour takes place with regard to immediate or delayed gratification. When a person works from a local bookkeeping perspective, they are seeking immediate gratification, while from a global bookkeeping perspective they are delaying immediate gratification for more beneficial long-term goals. It is argued that addicts always work from a local bookkeeping perspective, always choosing immediate reward, even at long-term detriment to themselves and others. In order to achieve change in the cycle of addictive behaviour, a more global bookkeeping perspective must be developed and nurtured (Herrnstein, Loewenstein, Prelec, & Vaughan, 1993). Global bookkeeping and long term higher rewards correspond with social and moral responsibilities that are beyond the personal and immediate cost and reward functions that are acted out during addictive behaviour. This will be discussed further in relation to Orford’s (2001) model of excessive appetites later in this chapter (1.1.2 page 8).

Another important concept when discussing change in an individual’s addictive behaviours is that of relative reinforcement value (RRF) (Orford, 2001). This originates from a behavioural economics perspective, which places the value of enjoyment gained from engaging in the addictive behaviour in direct comparison to the enjoyment or satisfaction gained from alternatives which do not involve links to the problem behaviour. It has been shown that individuals who engage in several positive (drug-free) activities require only a small increase in the positive reward from these activities in order to move away from drug taking. However, those individuals who receive a lot of reward and reinforcement from drug taking and drug related behaviour require substantial change and reward from alternatives if there is to be any reduction in the problem behaviour (Kurti & Dallery, 2012). Again this relates to Orford’s (2001) model, which includes aspects of these wider social and environmental factors, by taking into account

individuals who may find their daily routine, social networks and environment completely encompassed by cues and reinforcing factors related to addictive behaviour. In order to successfully move out of the problem behaviour, changes must be made to the wider infrastructure that holds the problem behaviour in place. This also draws parallels with considerations of automaticity, which is reference to an unconscious automatic response developed over repeated exposure, or training in a particular situation, which produces the same unconscious physiological, physical or cognitive reaction whenever a particular stimulus is received. Increased engagement in an activity leads to automaticity of actions related to the activity, as well as building strong social networks and behavioural habits that help perpetuate the addictive behaviour and make it increasingly difficult to abandon once established, as no alternate networks or habits are readily achieved (Bargh, Schwader, Hailey, Dyer and Boothby, 2012).

Another key notion relating to the multiple influencing factors in people's behaviours and unconscious or uncontrolled responses is that of dual system processing (Wiers & Stacy, 2006). Dual system processing proposes two different systems interacting and producing choice outcomes. One system is regarded as conscious and deliberate, requiring higher levels of concentration, thought and consideration; the other system is intuitive, impulsive and automatic. Dual processing theory will be discussed in more detail later in this chapter when applying theoretical explanations of gambling addiction.

In stark opposition to a biological medical model, Davies (1998) takes a more extreme view that addiction only exists as a personal manifestation of a social construct, with no real entity or underlying cognitive processes taking place. Heyman (2009) also refers to addiction as a question of choice, rather than affliction. Both Davies and Heyman move away from the medical biological concepts of addiction that have been popular in models considered above. Whereas Davies approaches his analysis of drug users' discourse with doubts over the honesty or clarity that can be achieved, more recently Orford (2001, 2012) argues that individuals do attempt to give honest accounts of their behaviour in their discourse, and while it will by its nature contain contradictions and inconsistency due to the complex conflicts taking place, we should not be overly cynical when approaching the value of self-disclosure. Orford is critical of both extreme

views (that is, as addiction being either a free choice or a medical disease), regarding these views as attempts to over simplify a much more complex phenomenon. There is no single definition of addiction that suits all people from all alternative scientific approaches at all times. Varying backgrounds, understanding what constitutes knowledge in a particular area and the constantly changing landscape of psychological research make pinning down one truth to cover all a difficult thing to do. This is the view constructivist approaches to addiction subscribe to, where the addicted state is no more than creation of addict identity, by both the individual and the collective wider socio cultural construct which maintains it. Orford does not go that far, but he does welcome the movement away from a positivist scientific, medical approach to understanding addiction, toward a multifaceted model incorporating socio-cultural elements. It is to a more detailed consideration of Orford's model that we now turn.

### **1.1.2 Excessive appetites (Orford, 2001)**

Orford's (2001, 2012) approach to addiction and addiction theory as a whole provides a complex model incorporating social, behavioural, cognitive and moral elements. Excessive appetites and addictive behaviours cannot, he states, be limited simply to the excessive or addicted consumption of substances, either legal or illegal. The notion of addiction must, if we are to begin to understand it comprehensively, include behaviours that include such things as gambling, not just consumption of substances. There are many routes into addiction, stemming from not only individual differences, but also social and environmental determinants, which all contribute to the development of an addiction. Within individuals, different aspects of addictive activities provide different functions for that individual. The notion that gambling can be compartmentalised as a single activity which generates the same emotional or physiological response, or is engaged in the same way by an individual irrespective of which type of gambling it is, is an over simplification of the issue. Orford's excessive appetites model focuses on a behavioural framework of psychology, with both learning theory and cognitive behavioural aspects. However as mentioned the social contribution and the wider moral stand point on issues surrounding addiction and what it means to be an addict, or a recovered addict, also have a place within the

model. Orford's model is not one of disease or biological basis, in that he claims there is a more integrated approach required of modern addiction knowledge. This does not reject the notion that individual differences and pharmacological effects of substances do have an effect, but that these factors are not on their own sufficient to explain the multi-faceted interactions taking place in the evolution of an individual's addiction. This is clearly stated as a psychological model of addiction that incorporates the conception and the maintenance of not only substance, but also behavioural addiction such as gambling (see Figure 1.1.2).

What is often ignored in approaches to understanding changes in addictive behaviour are the social structures that contribute to change, whether it be close support or broader opportunities to bring about a supportive journey out of addiction, and the moral processes, which point toward the wider attitudes found within the addict's cultural environment, i.e. is this behaviour tolerated, or judged to be harmful to oneself and/or others? This is possibly due to the strong adherence in popular culture to a medical model of addiction, or a colloquial attitude of having an "addictive personality", that then requires focus on the individual rather than the wider social context they find themselves in.

Orford suggests that giving up addiction is a natural consequence of conflict built up over increasing costs against strong attachment, interacting with a variety of other complex factors beyond the scope of individual differences, or psychobiological limitations, and that there are two elements to the change process regarding addiction – a cognitive stage of re-evaluation and decision-making to change, and a second action stage which involves the behaviour of change.

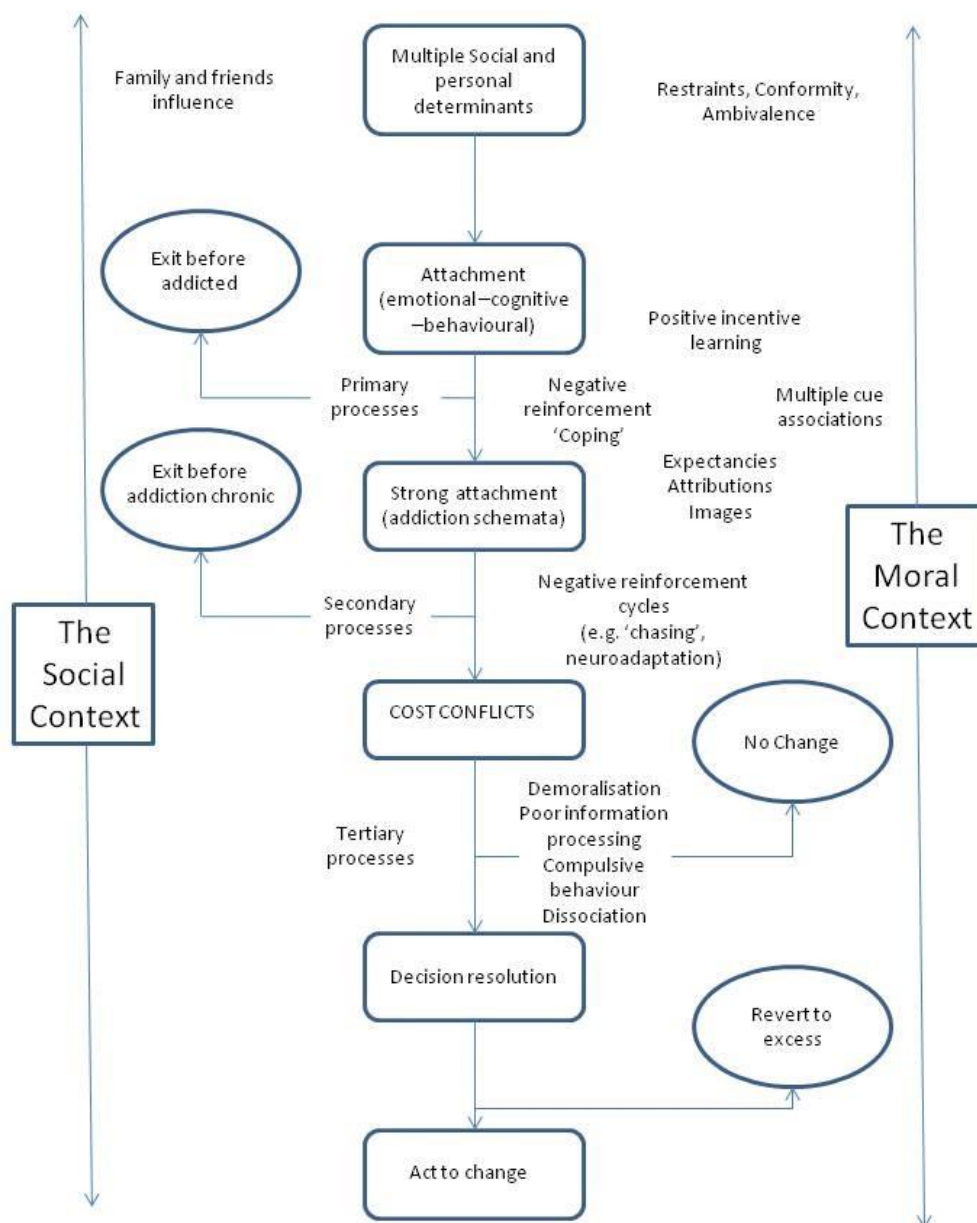


Figure 1.1.2 Excessive appetites model (adapted from Orford, 2001, p.345)

There have been to date four broad interpretations of how addiction develops (Skog, 2003):

- One, addiction as disease. This has been largely abandoned.
- Two, addiction as rational self-medication. Here the addict begins as a rational free choosing self-medicator, who gradually develops attachments that diminish rational ability to change.
- Three, addiction as a primrose path. The addict slowly slips into a state of addiction without awareness.
- Four, the divided self. The addict has conflicting attitudes and beliefs about the behaviour, either in succession or simultaneously, which creates huge internal conflict.

Orford draws on aspects of the three final elements, but largely from the last. It is the internal conflict that is a key central point, and the elements which contribute to creating and maintaining that conflict are multiple and various. It is also Orford's view that there are three key indicators that an individual may be experiencing addiction, which are cognitive, behavioural and emotional changes, the combination of which is as strong an indicator of gambling addiction as it is any other substance based addiction, which brings us to the current definition of gambling addiction specifically.

To summarise, Orford's definition of addiction is "an attachment to a particular object of consumption, so strong that the person finds it very difficult to curtail consumption despite the considerable harm it is causing" (Orford, 2011. p. 72).

In addition to Orford's concise definition, Griffiths (2013) presents six core components of addiction. He argues that any behaviour fulfilling the six components can be defined as addiction.

- Salience – If the activity/behaviour totally preoccupies a person's thoughts. Even when not currently engaging in the behaviour, the person is thinking about it.



- **Mood Modification** – Associated consequences of the behaviour that achieve an experience of heightened sensations, such as a buzz or a high: or alternatively a subdued, relaxing sensation such as escape, or numbing.
- **Tolerance** – an increased level of activity in order to achieve the previous effects.
- **Withdrawal symptoms** – If the activity is stopped or prevented somehow, the person experiences negative physical and or/emotional effects.
- **Conflict** – Conflicts can be numerous, referring to conflicts with other people due to the behaviour; conflicts with other behaviours or activities (work, family commitments); conflict with self.
- **Relapse** – A tendency for reverting to past behaviours even after long periods of control, and for the behaviour to return to extreme levels quickly.

Griffiths argues that these core components are present in any behaviour that might be regarded as addictive.

### **1.1.3 Gambling addiction**

Moving from addiction in general, as we begin to discuss the development of gambling addiction, there is an issue raised with the distinction between gambling problems and problem gambling (Blaszczynski & Nower, 2002). The definitions and criteria used to categorise problem gamblers may make reference to individuals experiencing gambling-related problems that are not the same as being gamblers who have problems controlling or regulating their gambling impulses. For instance, a definition of problem gambling that uses social problems arising from gambling behaviour as a criterion by which to label the gambler as a problem gambler, may find that the social problems arise from religious differences or disagreements in family finances that are not actually issues of individual impairment of self-control or any underlying psychological disorder. This can be exemplified by the self-justifying problem gambling definition which states that problem gambling leads to harm for the individual, their social network or community (Ferris, Wynne, & Single, 1998), to which it has been pointed out the distress caused to a strongly

religious person if their spouse spent two pounds a week on the lottery, would contribute to this definition of problem gambling (Walker & Barnett, 1999). Likewise, if a person chose a gambling activity over another recreational alternative of the same monetary cost, much to the distress of their partner, leading to a negative emotional outcome, this could contribute to a diagnosis of problem gambling. The subjective nature of the criteria used to define problem gambling was also raised, that it is often ill-defined or uses arbitrary terms, often self-justifying, when defining addiction of any kind (Davies, 1998).

#### **1.1.4 DSM-5 definition of gambling addiction**

The most widely accepted current definition of addictive behaviour can be found via the DSM-5 (2013), which places all substance use disorders on a continuum from mild to severe, and whilst each separate substance is dealt with separately, it is acknowledged that there are commonalities between them when diagnosing substance use disorder. In addition to the use of substances, for the first time there is now present a category of addictive behaviours, which contains only gambling disorder. This is due, as stated in the DSM-5, to recognition of similarities between gambling disorder and substance use disorders. It is of key interest for the present research that gambling disorder is now recognised by the DSM-5 as the first and only behavioural addiction and is categorised alongside substance use disorder. Someone is defined as having a gambling disorder if they exhibit four or more of the criteria in Figure 1.1.4 over a twelve-month period.

**DSM – 5 Non-Substance-Related Disorders**  
**Gambling Disorder: Diagnostic Criteria 312.31 (F63.0)**

1. Needs to gamble with increasing amounts of money in order to achieve the desired excitement.
2. Is restless or irritable when attempting to cut down or stop gambling.
3. Has made repeated unsuccessful efforts to control, cut back, or stop gambling.
4. Is often preoccupied with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money with which to gamble).
5. Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed).
6. After losing money gambling, often returns another day to get even (“chasing” one’s losses).
7. Lies to conceal the extent of involvement with gambling.
8. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling.
9. Relies on others to provide money to relieve desperate financial situations caused by gambling.

Figure 1.1.4 DSM-5 diagnostic criteria for gambling disorder (APA, 2013)

From this general discussion of addiction theory and armed with a contemporary definition of gambling addiction, we now look at how problem gambling develops and specific theories used to understand problem gambling.

## **1.2 Applying theory to problem gambling**

Again the aim of this section is not to provide an exhaustive account of theories of problem gambling, but rather to consider some of the main theoretical constructs that have been proposed to underpin problem gambling which are directly applicable to the current research.

### **1.2.1 Learning theories**

One of the simplest and clearest ways to explain the development of addiction is through the psychological behavioural understanding of conditioning (Skinner, 1969). This is in keeping with most modern views of addiction formation and explains the way people acquire and maintain behavioural habits. Also referred to as Skinnerian conditioning, operant conditioning is explained by the way a specific behaviour is reinforced when it is met with a reward. Increases in the specific behaviour lead to increased reward, and the associated rewards, and changes in physiological arousal all lead to an increased desire to engage in the activity. In the case of gambling, the primary reward may be winning money. However, it is not the only reward. Many gambling activities have social settings, so engaging in gambling activities also leads to increased social interaction, and successful gambling in a social setting can lead to raised social status. Furthermore, the increased level of arousal when watching a sports game, and the potential for not only watching your team win, but also gaining a financial reward alongside the win, or risking but avoiding a loss may also be rewarding (Orford, Wardle, Griffiths, Sproston, & Erens, 2010). The fact that financial winnings can then be exchanged for many other rewarding goods and services, which are in themselves appealing in some way, such as items of value, drugs and alcohol, or sex should not go unnoticed (Orford, 2012). Quite often one of the initial reasons a gambler will give for gambling is the potential to receive money. An initial early win experience will reinforce the view that money will be won easily (Sharpe, 2002; Haw, 2008), although the desire to play to win each time can change along a gamblers' career. It is often found that early stage problem gamblers most commonly report playing to win money, while later stage problem gamblers will report playing to achieve other goals, such as dissociation (Orford, 2001).

Bearing in mind that all mainstream organised gambling establishments will operate on the basis that most customers lose money, how does operant conditioning explain the increased levels of gambling amongst a group who mostly does not receive the reward they desire? Factors that may influence operant learning include the notion of gradient of reinforcement. Here immediate rewards, possible physiological benefits, and occasional wins, outweigh the long term outcomes which will not be realised until hours or even weeks later, when the gambler has to return home without money, or fails to pay a bill at the end of the month. The immediate occasional money reward outweighs the distant penalty of poverty, even though it is ultimately greater. This corresponds with the concept of local and global bookkeeping discussed earlier (Herrnstein & Prelec, 1992).

Predictable outcomes in an activity allow the individual taking part to reliably know when to expect a reward. However, if the rewards come without any definite predictability, the individual participates actively at each juncture in the hope that the desired outcome will be the next one to arrive. Predictability allows a degree of certainty, while unpredictable outcomes allow hope. This feeds well into the gamblers' fallacy covered further in section 1.2.4.

Classical conditioning would suggest that previously neutral stimuli such as dice, betting slips or roulette tables develop incentive meaning to the individual through association. This type of conditioning is experienced unconsciously through regular exposure to certain cues in a gambling environment, or certain associated behaviours and interactions with others in a social setting. These associations and stimuli which previously held no inherent potency gradually become linked to the emotional and psychological states of arousal experienced during gambling behaviour.

### **1.2.2 Cognitive theories**

Moving on from some of the general addiction concepts that are applicable to gambling, what follows are some of the cognitive concepts which are found to be particularly relevant to gambling. In addition to the predictability of outcomes and rewards, the reasoning processes and

strategies people generally employ in everyday life also can affect gambling beliefs and behaviour (Wagenaar, 1988). Heuristics, such as the availability heuristic and the representative heuristic are used to explain people's misunderstanding of probability. Kahneman and Tversky's work suggests that people in general are more influenced in their beliefs about outcomes based on striking individual cases than general statistical evidence. So presenting a gambler with statistics which demonstrate the percentage of losses experienced by gamblers in a casino or bookmakers, will not have the same effect on their beliefs about gambling as a compelling individual case where someone wins a large amount of money (Kahneman & Tversky, 1974; Tversky & Kahneman, 1973).

This misunderstanding of probabilities during random gambling tasks may go some way to explain the persistent and compulsive gambling, despite reoccurring losses. While operant conditioning may be very important in our understanding of the development of gambling addiction, there are other contributing processes believed to be taking place. The previously mentioned dual processing approach is based on two internal systems involved in decision-making and behaviours. Table 1.2.2 shows some of the typical characteristics attributed to the two systems.

Table 1.2.2 Dual-process theories: Key characteristics (Evans, 2003)

<b>System One</b>	<b>System Two</b>
<b>Unconscious</b>	Conscious
<b>Evolved Early</b>	Evolved late
<b>Shared with animals</b>	Uniquely human
<b>Nonverbal</b>	Verbal
<b>Rapid, parallel</b>	Slow, sequential
<b>High capacity</b>	Low capacity
<b>Domain specific</b>	Logical, abstract
<b>Pragmatic</b>	Hypothetical
<b>Independent of working memory and IQ</b>	Related to working memory capacity and IQ

Recent models of addiction have begun to highlight the role of the relationship between conscious, explicit behaviour and unconscious, implicit processes that are less subject to conscious awareness and control (Borland, 2013; Wiers & Stacy, 2006). System One is a quick unconscious intuitive system which people tend to defer to when making decisions as it is less demanding; System Two is a slower more thoughtful and demanding system which requires some effort to override the quicker, impulsive, System One (Wiers & Stacy, 2006).

One aspect of System One thinking relates to cognitive biases and errors that individuals make by relying on intuitive misunderstandings of probabilities, and/or causal relationships. The present research incorporates a self-report of fallacious beliefs, tapping in to erroneous beliefs during decisions of risk and probability which have been of interest since the illusion of control was first examined by Langer (Langer, 1975) and Tversky and Kahneman's (1971) work on the gamblers' fallacy.

#### **1.2.2.1 The illusion of control**

A key element in gamblers' erroneous cognitions is that of the illusion of control (Langer, 1975). Many different things can affect an individual's illusion of control, which is essentially the belief that the individual possesses some influence on the outcome of a random event, greater than the actual probability of outcome. This could be such things as believing that one possesses skill in a game that is purely chance. Likewise, prolonged play of a specific game can lead to increasing confidence, due to familiarity with the game, whilst chance remains random. In a similar vein, individuals will choose a familiar game over an unfamiliar game, even when the likelihood of winning is unaffected by the familiarity. There is also the assumption that a near miss represents an outcome that is closer to winning, as opposed to a loss, and therefore promotes the belief that skill is developing, and promotes further play (Parke & Griffiths, 2004).

Following the illusion of control, erroneously perceived control in a gambling task may lead to increased wagers and risk, even when no control is present. Recent research looking at brain function during a gambling task (The Iowa Gambling Task), suggests that when comparing

a group of problem gamblers to non-problem gamblers, neural correlates of perceived control exist amongst problem gamblers that mistakenly lead to a belief of perceived control where no control exists (Hudgens-Haney et al., 2013). Problem gamblers were in fact five times more confident in their decision-making during the gambling task than the non-problem gamblers. The magneto encephalography responses comparing outcomes in two different tasks, one with some levels of possible control and one without any possible control, found only the non-problem gamblers demonstrating neural differences in response to the different tasks. This lack of discrimination and over confidence amongst problem gamblers during their decisions during non-control tasks is believed to demonstrate lack of inhibitory control when engaged in gambling tasks in problem gamblers (Hudgens-Haney et al., 2013).

#### **1.2.2.2 The gamblers' fallacy**

The gamblers' fallacy as previously mentioned is the tendency to expect a natural balance in chance occurrences (Tversky & Kahneman, 1971). While outcomes are unknown at each point, the gambler (mistakenly) believes that the probability of individual outcomes is dependent upon the total range of outcomes. For example, if a fair coin is tossed fifty times, then probability theory indicates that the *most likely* overall outcome would be 25 heads and 25 tails. The gamblers' fallacy would lead them to believe that an equal number of heads and tails *will* be revealed across the fifty outcomes. Therefore, if a larger proportion of heads are revealed early in the sequence, there is a belief that due to an overall outcome of equality, more tails will be revealed later in the sequence, and that this is more likely the longer the sequence goes on. So the losing gambler will continue to place money on their lucky number on roulette, believing that the longer they play the greater the chance of their number coming up. The reality is that at each spin (or coin toss) the probability is reset and length of play has no effect on outcome (Tversky & Kahneman, 1971). This type of sequence is known as a variable ratio reinforcement. Many people fall into this error, believing that if their number has not come up on roulette, that it is due, or that certain lottery numbers are due, because they have not come up for a long time (Orford, 2001). However, at each event, the probability of outcome remains the same as it was at the previous event. So in the case



of the coin toss, each outcome is equally probable, heads or tails, and previous outcomes have no bearing on that. This is known as Random Ratio reinforcement. The probability of 50 heads is just as likely as any other *specific* sequence, however the likelihood of tails appearing during any sequence is greater, because of the greater number of *possible sequences* which may include a tails at any point (Orford, 2001).

Whilst some of these cognitive biases appear explicitly, there is strong evidence that addicts of all kinds are affected by unconscious attentional bias (System One). This has been demonstrated through use of the Stroop task in a variety of addictions (Cox, Fadardi, & Pothos, 2006). Attentional bias refers to the diversion of attention away from the task in hand, by objects, words or other items which are strongly associated with the addiction of the individual.

There is evidence that gamblers develop cognitive biases which allow them to focus more on wins and near misses, during recall of a gambling episode, and dismiss clear losses. By examining the role of near losses in gambling machine play, it is suggested that gambling establishments produce large numbers of near losses, which are misrepresented by the gambler as almost wins. This leads to heightened arousal and physiological effects which produce rewards even though the gambler is losing, as well as a misinterpretation of the event as one of skill and the illusion of control on the part of the gambler, encouraging further play, which would not be encouraged by a clear loss (Clark et al., 2013).

Research into near miss outcomes has revealed some interesting concerns regarding the exploitation of industry regulations. A near miss outcome can be defined for the purposes of gambling activities, as an outcome that offers no reward, but presents itself as similar in many other respects to a full win. Such outcomes are often misinterpreted by gamblers as a demonstration that they are acquiring skill at a particular game, and encourages play by those individuals under this misapprehension (Clark et al., 2013).

Moderate amounts of near miss outcomes of around 30% promote persistent continued play, specifically amongst slot machine players (MacLin, Dixon, Daugherty, & Small, 2007). Whilst near misses are accepted as being less desirable than full wins, there is neuro-imaging evidence that suggests similar brain circuitry is being activated during near miss outcomes as with

full wins, and that these responses may be increased amongst problem gamblers (Clark, Lawrence, Astley-Jones, & Gray, 2009). Evidence of near misses heightening reward expectancy has also been demonstrated in animal studies. In a task where a 'win' was indicated by three continuous lights in a simulated slot machine 'game', two out of three lights produced heightened reward expectancy and behaviour in rats. These findings have been interpreted as dopamine modulating reward expectancy in near miss outcomes, leading to an enhanced near miss effect which encourages continued gambling behaviour (Winstanley, Cocker & Rogers, 2011). However, the extrapolation from neurochemical responses to psychological *meaning* in animals is a large gap to span. In recent human research, 122 participants were assessed using the Problem Gambling Severity Index (PGSI) and measured for skin conductance responses and post reinforcement pauses during a slot machine simulation. The findings suggest an interpretation of frustration by the participants at near miss trails, stimulating aspects of the reward system which in turn encourage further gambling behaviour (Dixon, MacLaren, Jarick, Fugelsang & Harrigan, 2011). From a gambling environment perspective, near miss outcomes are not regulated by the industry in the same way as full win outcomes are. But as demonstrated, the evidence suggests that near win outcomes may play a significant part in promoting continued game play, even in the face of losses, amongst gamblers. Problem gamblers have also reported belief in insider information, or secret systems that eventually will lead to profitable gambling success. Some individuals finally accept that such a system does not exist, whilst others believe that any failure is due to them not following the system correctly (Wood & Griffiths, 2007).

In other decision-making research which involved a simulated gambling task, it was found that people generally demonstrated a feeling about whether an outcome would be good or bad before they had enough information to know if it really was the case (Hinson, Whitney, Holben, & Wirick, 2006). Hinson et al argue that individuals who lack the emotional reactions that signal good or bad choice outcomes are particularly bad at making good choices in such a task. During the experiment good and bad outcomes were accompanied by salient words, which were either congruent or incongruent to the outcome. Congruent word to outcome results enhanced the performance during the gambling task, whereas incongruent word to outcome

relationships interfered with performance. In another version of the experiment, salient words, either positive or negative were held in working memory, whilst engaging in the gambling task. Positive words improved performance during the task, and negative words inhibited performance, suggesting that embedded value or meaning of words can affect performance implicitly during a decision-making task. (It is for this reason that negative words have been selected as one of the word categories for the Gambling Stroop Task used in this thesis, detailed in Chapter Two.)

Somatic markers are regarded as unconscious emotional reactions to salient stimuli, and are believed to affect decision-making (Bechara, Damasio & Damasio, 2000). Skin Conductance response as a measure of somatic marker was taken during the gambling task research by Hinson et al (2006), and appeared only when performance was better, but also only appeared as the session progressed and good performance was established. Findings from this research suggest that pre-existing biases can influence gambling task decision-making. Well established somatic markers can have a positive influence in unconscious decision-making during a gambling task, and even when specific knowledge of a task may suggest certain decision contingencies, somatic markers can still unconsciously influence decision-making. Reactions that are being triggered unconsciously during deliberation of a decision may be being influenced by somatic markers modulating response without a person's conscious awareness. The physiological reactions that accompany good decision-making have an unconscious effect on people's future decision-making when similar physiological responses occur. The authors conclude that poor decision-making during a gambling task can stem from interference with cognitive processes that are required to anticipate good outcomes. Interference in this ability can come from increased cognitive load, and emotional biases produced from stress, anxiety or depression, all characteristics that are associated with problem gambling (Hinson et al., 2006).

Pathological gambling as previously mentioned is categorised by the DSM-5 as the only behavioural addiction, relying not on consumption of a substance but developing through engaging in a type of decision-making behaviour, relating to the concepts of reward described as conditioning. Gambling (particularly organised) as an activity, has the striking characteristic of making no rational sense to the gambler (de Stadelhofen, Aufrère, Besson, & Rossier, 2009).

Addiction of many kinds, including gambling, contains a paradox of behaviour where a person may consciously state that they know the harm of the behaviour; however, they still engage in the harmful act despite this conscious awareness. Wiers and Stacy (2006) explain this with their dual processing model of decision-making, which proposes two systems at work when decisions are being made. The first, a fast impulsive system based on instincts and heuristics, is quick and often inaccurate. The second, a slower more conscious, thoughtful system, takes more time and effort to consider the options based on actual information present. It is believed that repeated addictive behaviour strengthens the automaticity of impulsive tendencies (System One) related to that addiction, which are outside the control of the slower conscious System Two (Wiers & Stacy, 2006; Redish, Jensen, & Johnson, 2008).

Cognitive explanations of addiction can reflect differences between implicit, System One impulses and conscious, System Two decisions. Those differences are based on impulsiveness, illusion of control and shifting balances. These refer to imbalances between conscious decision-making that are overridden by impulsive, cognitive errors in the appraisal of risk and probability. Pathological gamblers may have impaired decision-making due to the inability to inhibit irrelevant information, and be more prone to cognitive distortions. The negative biological consequences of high frequency, repetitive behaviour patterns often include neuroadaptation, a change in neural function as result of experience (Karim & Chaudhri, 2012). Certain aspects of addiction fit within a framework of neuroadaptation, such as tolerance. Gamblers can report a pattern of increasing bets to achieve the same level of excitement, and also experience withdrawal (Shaffer & Kidman, 2003).

Research has recently started looking at the idea that problem gamblers have impaired decision-making abilities. This impairment has been compared to patients with lesions of the ventromedial prefrontal cortex, which can result in faulty decision-making based on immediate instead of delayed gratification. In research comparing 25 problem gamblers to healthy controls in a gambling dice game task, it was found that problem gamblers displayed inferior decision-making to the healthy counterparts. A possible explanation suggested by the researchers is a dysfunctional orbitofrontal cortex, which is believed to be involved in the interpretation of

somatic markers during decisions (Brand, Kalbe, Labudda, Fujiwara, Kessler & Markowitsch, 2005). Research has also found that problem gamblers have decreased ability to evaluate the future consequences of their actions. An issue regarding inhibitory control relates to problem gamblers not being able to inhibit irrelevant information and filter out interference when making risky decisions. This aspect of control is essential when protecting goal directed behaviour (Kertzman, Lidogoster, Aizer, Kotler, & Dannon, 2011).

Directly relating dual processes to gambling addiction, Evans and Coventry (2006) suggest that when faced with behaviour that may be initiated by the unconscious System One, the conscious System Two will attempt to provide a post-event rationalisation. This leads to confabulations during self-reports, constructed in an attempt to satisfy the need for a logical and rational causal explanation for behaviour, which allows the individual to maintain some notion of autonomy regarding their behaviour.

Established learning theories, such as conditioning mentioned previously, give us a good understanding of the reinforcements taking place, both positive and negative, in the development of an addiction. The secondary processes that often develop during addiction make it more difficult for an individual to remove themselves from an addictive cycle. These include such things as feeling negative about one's self and behaviours, poor information processing and the ease with which one can fall into compulsive or impulsive behaviour, due to lack of easy alternatives. Theories of dual processing, when discussing System One and System Two thinking, highlight the individual's struggle to compete with their easy, impulsive short cuts taken by System One, when under stress, cognitive load, emotional turmoil or any other additional load that puts the more thoughtful and considered System Two under pressure (Borland, 2013; Kahneman, 2011; Wiers & Stacy, 2006). It is easy to see therefore, how someone experiencing emotional, social and even physical detrimental effects from addictive behaviour, would more easily fall back into impulsive, automatic habits, that may alleviate the strain even for the short term. The present research examines the relationship between two implicit measures of gambling (System One), and explicit measures of gambling (System Two) in a sample of frequent gamblers.

### **1.3 Individual differences**

The majority of people gamble (Wardle et al., 2011), but only a small percentage of regular gamblers become problem gamblers (Williams, Volberg, & Stevens, 2012). In order to account for this, individual differences have been proposed as a key explanatory construct. Gyollai et al., (2014) conducted a systematic review of problem and pathological gambling, and the genetic factors associated with it. They found a clear indication of genetic vulnerability, linked to the dopaminergic and serotonergic systems. The focus of research has been on linking gambling addiction to factors already associated with other addictions. Gyollai et al. suggest that further research is needed to identify possible gambling specific factors.

When examining the differences between pathological and non-pathological gamblers, it has been found that certain personality traits are of particular interest. Some early research has examined individual differences in arousal, suggesting that problem gamblers may experience greater arousal increases during gambling than non-problem gamblers. Studies have used a variety of measures of arousal, both subjective self-report and physiological (such as heart rate), and found that gambling is associated with arousal increases across a variety of forms (Anderson & Brown, 1984; Coventry & Brown, 1993). However there have also been discrepancies found between self-reported arousal measures and physiological measures. This has led some researchers to suggest that post-event rationalisation may take place, for example in the form of claiming that a gambling episode was incredibly exciting, as if that level of excitement justifies the expenditure of time and money in the face of loss (Coventry & Constable, 1999). Overall, although arousal does appear to correspond with gambling, it is not always a factor that appears to distinguish between high and low level gamblers or increases in gambling involvement (Griffiths, 1993; Dickerson, Hinchy, England, Fabre & Cunningham, 1992).

Various personality measures have been proposed as a means of separating problem from non-problem gamblers, often with respect to specific variables, such as arousal. Sensation seeking, as proposed and developed by Zuckerman (1979), is defined as the (variable) need for a

high state of arousal. Several studies have found that high frequency gambling and overall risk taking behaviour is indeed associated with high levels of sensation seeking (Wong & Carducci, 1991; Waters & Kirk, 1968; Wolfgang, 1988). However, there is evidence that contradicts this (Dickerson, Walker, England & Hindy, 1990; Coventry & Brown, 1993). These contradictions are in keeping with the later suggestion by Blaszynski and Nower (2002) that whilst some gamblers seek arousal and stimulation during gambling and favour certain types of gambling activity, others seek dissociation, which will be discussed later in this chapter.

### **1.3.1 Impulsivity**

A key personality trait related to sensation seeking and arousal which has been found to have strong links with problem gambling is impulsivity. Impulsivity is not always clearly defined, although in essence it requires two elements, an impulse to act and a failure to restrain that impulse. Defined recently as spontaneous or unintentional behaviour where one acts without thought or self-control, impulsivity is “A tendency towards making rush decisions, without careful consideration of the potential negative consequences” (Lui, Lee, Goldweber, Petras, Storr, Ialongo & Martins, 2012; p.270).

Several recent studies have shown that problem gamblers score higher on impulsivity than non-problem gamblers or non-gamblers. Blaszczynski and Nower (2002) found that problem gambling severity is strongly linked to gamblers with impulsivity issues and due to a combination of this and other factors, including family history and early onset, such gamblers are often unresponsive to traditional treatments. Indeed, research examining the personality characteristics present in early adulthood that may predict gambling have focused increasingly on impulsivity. Impulsivity is a trait that immediately appears to correspond with addictive behaviour and notion of seeking immediate reward, and is acknowledged as a key individual difference that may contribute to increased susceptibility to adopting a local bookkeeping perspective (Heyman, 2009; Maccallum, Blaszczynski, Ladouceur, & Nower, 2007).

Other personality traits such as risk taking and sensation seeking are regarded by some as components of impulsivity. Following the Five Factor Model of personality from Zuckerman,

Kuhlman, Thornquist and Keirs (1991), which includes activity, aggression-hostility, neuroticism-anxiety, sociability and impulsivity sensation seeking, it was found that impulsivity and sensation seeking when combined in the same questionnaire construct, distinguished problem gamblers from non-problem gamblers (Bagby, Vachon, Bulmash, Toneatto, Quilty & Costa, 2007). Lui et al (2012) found impulsivity not to relate to general gambling behaviour, but only to at-risk or problem levels, which suggests that greater impulse control may not reduce gambling involvement, but may reduce the capacity for developing problems. Other research found that excitement seeking, related to sensation seeking, may be high in all those who gamble, not distinguishing between problem and non-problem gamblers in the same way impulsivity does (Bagby, Vachon, Bulmash, Toneatto, Quilty & Costa, 2007). Blanco et al (2009) went further to explore changes in problem gamblers and the relationship between these changes and changes in personality traits. It was found that changes in problem gambling correlate with changes in impulsivity, and changes in impulsivity may mediate change in problem gambling. The findings were that the problem gambling personality is high on impulsivity and emotional vulnerability.

### **1.3.2 Dissociation**

Comparing gambling addiction to addictions of substance abuse, it has been suggested that addicts often use substances to achieve a change in mood state, which enables escape from day to day problems, and gamblers use the engagement of gambling activities in the same way. If an individual experiences high levels of unwanted mood states due to day to day problems, the desire to engage in gambling activities is extremely high when used as a blocker of these unwanted thoughts in pursuit of dissociation from current concerns, stressors or life problems (Jacobs, 1986). Dissociation is regarded by Putnam (1991) as a process that involves changes to a variety of factors, including the sense of self and behaviour. Dissociation can be described as an alteration in consciousness that affects attention, sense of time and surroundings and memory (Kihlstrom, Glisky and Angento, 1994). Dissociation along with hyperarousal (anxiety) has been found in previous studies to be the highest predictor of problem gambling (Gupta & Derevensky, 1998). Gambling has been found to be used as a means to alleviate negative feelings such as low self-



esteem, depression and boredom through mood modification (Wood & Griffiths, 2007). Problem gamblers who suffer from depression favour social isolation or repetitive activities in an effort to moderate mood. More recent studies have found high prevalence of mood disorders amongst problem gamblers as well as depression (Black & Moyer, 2014).

Problem gamblers are more likely to report dissociation during gambling compared to other players (Wood, Gupta, Derevensky, & Griffiths, 2004). Gambling is also found to provide dissociation, or escape from everyday problems, creating a ‘buzz’ from not only the sensation of winning, but the heightened state of arousal provided by the risk and uncertainty. Alongside that, when in a social setting, with interactions between other gamblers, whether it be online or physical, dissociation from the outside world can be achieved through immersing oneself into the gambling setting (Orford, 2012).

It has also been discovered that mood modification achieved through dissociation, rather than monetary gain, is the main motivator amongst some gamblers (Wood & Griffiths, 2007). In a qualitative investigation of problem gamblers, Wood and Griffiths interviewed 50 problem gamblers about their development of problem gambling and their motivations to continue. Following a grounded theory approach, the primary theme that emerged was that gambling was engaged in to achieve a change in mood state, through dissociation, with gambling to escape identified as a key motivation. A particularly interesting observation was that for gamblers in the later stages of their addiction, the main motivator was the dissociation produced from gambling, as opposed to simply the desire to win money. It was more typical that early stage problem gamblers would refer to money being their prime motivator. This has bearing on the discussion by Orford regarding operant conditioning amongst gamblers. The question was raised; why do gamblers continue gambling when the apparent reward – ‘winning money’ – is not the typical outcome? Here appears to be one possible answer, that as gamblers progress further into their gambling careers, they are increasingly motivated by dissociation and less by the obvious reward of winning money. Dissociation can be achieved from continued gambling whether or not winning occurs. Contextualising this in terms of dual processing theories, the aims and

rationalisations of winning money from extended gambling behaviour may be regarded as System Two, consciously considered cognitive alignments. One possible interpretation of the desire, or drive to achieve a state of dissociation, whether of primary conscious concern or not, is that it may be more closely related to System One, unconscious, automatic thought processes.

### **1.3.3 Gambling as a coping mechanism**

Differences in coping styles between non-problem gamblers and problem gamblers have also been revealed. Findings show that non-problem gamblers and non-gamblers demonstrate adaptive task oriented coping strategies when faced with problems, as opposed to problem gamblers who favour emotion based strategies, which are deemed to be generally less effective (Gupta & Derevensky, 2001). Research has also found that problem gamblers may have poorer than average coping skills, or maladaptive coping styles when dealing with life problems, leading to an increased use of gambling as a distraction from such problems (Nower, Derevensky, & Gupta, 2004).

The use of gambling as a coping mechanism, avoiding negative mood states, and the detrimental spiral of producing and then alleviating gambling related problems, such as debt or relationship issues, are key motivators in continued gambling. Combined with cognitive biases, differing levels of illusions of control, and the effects of cognitive regret post loss, all produce influences on the individual's desire to continue gambling, and the difficulty with which they can stop or change their behaviour. It also appears that these factors can have differing levels of importance during the course of a gamblers' career in gambling, depending on factors that change over time, such as levels of debt and duration of problem gambling (Wood & Griffiths, 2007).

## **1.4 Understanding behaviour change**

In exploring models of behaviour and in particular addiction, one of the most useful contributions that can be made is to understand how individuals might move in to or out of harmful or destructive behaviours. If we can understand the contributing factors to behaviour change, then more effective diagnostic tools and interventions might follow.

The effects of automaticity and dual processing make it increasingly difficult for individuals to move away from problem behaviours, due to the considerable effort required to overcome unconscious, impulsive automatic responses to situations, emotional experiences and external cues. There is often a deep rooted internal conflict between behaviour and conscious desire to change reflected in addiction, which relates clearly to the dual processing model of decision-making (Wiers & Stacy, 2006). Becoming aware of a need to change is only the first step that often becomes part of a natural process of highly complex events, often leading to overall change without any formal intervention. It is often not the overcoming of a particular addictive behaviour itself, but the construction of a new identity as a non-addict, with new associates, social networks, routines, life goals and sense of self that is the most difficult aspect to maintain (Orford, 2001). There are also many individual aspects of past behaviour that people struggle to come to terms with when adopting a new outlook on life, and these considerations of past actions, as well as the pressures and stresses of upholding new routines and identities often prove the most difficult aspect of behaviour change in these circumstances (Orford, 2001).

### **1.4.1 Behaviour change theories**

A number of change models have been proposed which include this concept of overcoming automatic unconscious responses, with conscious, considered efforts to initiate change. Behaviour change theories often follow a prescribed series of stages; a person is believed to have entered a change process when they begin to embark on the early stages of change and success or failure to change is evaluated in the context of the model and the theoretical standpoint from which it is derived.

One of the earliest models of behaviour change (Janis & Mann, 1968), the Model of Appetitive Change, initially suggested a five stage model incorporating decision-making as a key facet.

The five stages were as follows:

1. The positive appraisal of danger in current behaviour or situation
2. The positive appraisal of a particular recommendation for change
3. The selection of the recommendation as the best alternative to the current unwanted behaviour
4. Commitment by the individual to the decision to adopt the recommendation as the new behaviour
5. Adherence to the recommended change, despite adversity and difficulty to that adherence

Recommendations have led to the stages being adapted to include significant events or communications that the individual experiences. This emphasises consideration of a broad range of factors, all contributing to the re-evaluation of past behaviour and the desire to change.

In the same vein Prochaska and DiClemente (1986) put forward the Stages of Change model, which consisted of four stages.

1. Pre-contemplation – During this stage the individual does not consider themselves to have any problem with their behaviour, and so has no desire or intention to change.
2. Contemplation – At this stage the individual identifies issues with their behaviour and begins to consider the benefits of change. But at this point nothing has changed apart from the individual's awareness of potential behaviour change.
3. Action – The individual makes effort to alter the unwanted behaviour
4. Maintenance – Behaviour has been changed, and now requires sustained effort in order to establish new behaviour replacements as the norm.

Prochaska and DiClemente (1986) went on to describe ten trans-theoretical processes of change. This goes beyond the initial four stages to incorporate a multi-faceted approach that derives different aspects from various psychological theories, hence trans-theoretical. The ten processes included in the trans-theoretical model are shown in Figure 1.4.1

1.      Consciousness raising – this involves such things as looking for information regarding behaviour change.
2.      Self-liberation – the individual begins to believe, and tell themselves, that they are capable of change.
3.      Social liberation – The individual becomes aware of social support for change.
4.      Self-re-evaluation – a change in the perception of self, and attitude of one's behaviour.
5.      Environmental re-evaluation – a consideration by the individual on the wider effects of their behaviour on those around them.
6.      Counter conditioning – adopting alternative behaviours in order to ease the transition away from the unwanted behaviour.
7.      Stimulus control – The individual begins to deliberately control their environment, to remove salient stimuli associated with the unwanted behaviour.
8.      Reinforcement management – The individual, as well as others in the social network of the individual, begin to notice and reward positive changes.
9.      Dramatic relief – The global and personal consequences of the unwanted behaviour elicit an emotional response.
10.     Helping relationships – There is a social network that enables the individual to talk about and share their thoughts and feelings regarding the unwanted behaviour and the positive change.

Figure 1.4.1 Prochaska and DiClemente's 10 processes of change (1986)

Orford (2001) highlights some of the key elements of Prochaska and DiClemente's processes of change. The focus of the processes of change are on the individual's efforts to change, such as self-liberation, re-evaluation and stimulus control, with only one element suggesting a place for the wider society (item 3, social liberation). He goes on to say that while it is open to some criticism, the stages and processes of change models proposed by Prochaska and DiClemente have moved forward thinking in the area towards a comprehensive model of change. Sutton (1996) criticised the model for being unable to predict change, even from stage to stage, and being an unrealistic model of how people actually change. However, Sutton did concede that it could be considered an ideal model of behaviour change in a prescriptive sense.

Orford's observations are that the focus of the model is on individual change, and there is a lack of the wider social context, which makes a large contribution in the real experiences of individuals struggling with behaviour change. He calls for consideration of the wider aspects of the social, spiritual and moral domains which also have effects on individual's efforts to change behaviours. However, whilst there is criticism of the transtheoretical model, there is also research that has applied the model specifically to gamblers. Petry (2005) evaluated 234 problem gamblers using the University of Rhode Island Change Assessment (URICA), a continuous measure of change relating to the four factors of the transtheoretical model. Petry's conclusions were that the model is a useful tool when applied to problem gamblers, and when assessed using the URICA, components emerged that correspond with the four factors of the transtheoretical model. Petry also recommends further evaluation of the model with gamblers experiencing change to assess whether change amongst problem gamblers is consistent with the processes of change described in the transtheoretical model.

A theory that takes the wider social context into account is The Theory of Reasoned Action (Fishbein & Ajzen, 2011). This theory is particularly applied to health behaviours, and whilst taking into account individual decision-making and control over their behaviour, and that behaviour is based on beliefs, value and the meaning behind the change, there is also an emphasis on the social context within which such meanings and values are constructed.

It is recognised that the behaviour of the individual when making health decisions is not only an isolated consideration of that individual, but is held as one possible view within the social group that the individual resides (Orford, 2012). The views, norms and values of the social group matter to the individual in forming attitudes towards certain behaviours. For some, there will be changes that are peripheral to the wider social consideration, and therefore hold less emphasis amongst peers or higher-level support networks, such as minor lifestyle changes. However, addiction is an example where, due to the often illegal nature of the activity, there is a strong social moral opinion against engaging in the activity at any level, although this does not apply to gambling.

Biernacki (1986) whilst following a stage model of change in addicted heroin users also gave much credence to a final stage which involved the development and transformation of the addict into a new 'ordinary' identity. This involved either the emergence of a new identity which had not existed before or during the addiction phase; the re-establishment of an old identity from before the addiction phase; or the extension of an identity that existed during addiction, but overcomes the addiction qualities and extends beyond them. Whichever pathway is taken out of addiction, both Orford and Biernacki suggest that a support network that helps establish a non-addict identity is necessary for successful transition.

In exploring change a longitudinal outlook toward addiction is essential in understanding addictive behaviour and the changes that take place during an addict's life more fully. Change in or out of addictive behaviour is the rule rather than the exception, and often without any professional intervention. Addicts often move along a continuum of behaviour, increasing and decreasing their involvement in addiction over time in a dynamic way, which is affected by multiple social and environmental factors, as well as the individual's desire to change (Anthony & Helzer, 1991).

In recent years' longitudinal research into gambling has been encouraged. Notably in Sweden, a government sponsored longitudinal national prevalence survey was employed to

identify factors related to problem gambling and how these affect gambling behaviours over time (Romild, Volberg & Abbott, 2014). It is argued that cross-sectional studies do not allow for understanding of the temporal sequence of gambling problems, associated factors and the interplay between each. A longitudinal analysis of Australian adolescents, conducted by DelFabbro, King and Griffiths (2013) found that amongst 16-18year olds, followed up at the ages of 20-21, change rather than stability in gambling behaviours was more likely. They suggested more individual analysis was required, examining patterns of gambling over time.

An analysis of the British Gambling Prevalence Survey 2007 by LaPlante, Nelson, LaBrie & Shaffer (2009) concluded that there is a lack of longitudinal studies of gamblers and that future research in gambling should examine longitudinal gambling behaviour and multiple measures of gambling involvement. The recent view of problem gambling behaviour is that it lies on a continuum, with gamblers moving into and out of problematic phases of addiction (Cox, Enns & Michaud, 2004). The approach employed in the current research follows that view, engaging regular gamblers in a variety of measures as they move along a continuum of gambling behaviour.

In the remainder of this chapter, methods of assessing problem gambling, both explicit and implicit are considered.



## **1.5 Assessing problem gambling**

With the previously mentioned key theoretical and methodological points in mind, the focus of the current research is on what gamblers say about their behaviour, implicit measures of that behaviour and how both of these elements change over time. Considered here are a range of methods used to identify and measure problem gambling, focusing in the strengths and weaknesses of different approaches.

Wood and Griffiths (2007) have also noted, that particularly in gambling research, there has been a distinct lack of qualitative research that has examined problem gambling in the context of talking to and understanding problem behaviour. Recent models of addiction have begun to highlight the role of the relationship between conscious, explicit behaviour and unconscious, implicit behaviours that are less subject to conscious awareness and control (Wiers & Stacy, 2006). Thus a key aim of the current research is to explore aspects of unconscious behaviours using implicit tasks, and compare findings across explicit and implicit measures.

### **1.5.1 Self-report questionnaires**

Traditionally much psychological research has relied on self-report questionnaire measures. Issues that are raised with self-report measures include the ability of the individual to explicitly and accurately report on underlying internal processes. One view is that the behaviour captured by self-report questionnaire measures is as much a symptom of the addicted state as the behaviour being reported on, and so is subject to the same influences of the underlying processes taking place. Therefore, self-report behaviour cannot be evaluated as external to the behaviour, attitude or belief that it is trying to tap into.

The problem of the reliability of self-report is magnified when one considers problem gambling. Problem gamblers are particularly unreliable reporters of their own gambling behaviour, as identified by Griffiths (2004) and also demonstrated by the inclusion of item 7 in the DSM-5 gambling disorder criteria, which states that the problem gambler:

(7) “Lies to conceal the extent of involvement with gambling”

It is also possible that when asking problem gamblers to report on their own behaviour, that they can have difficulty identifying underlying causes themselves. It has been suggested that gamblers provide a post-event confabulatory rationalisation of behaviour in an attempt to account for otherwise irrational actions (Evans & Coventry, 2006). While gamblers have been known to report in interview that they gamble when stressed, bored, or angry, casually reporting gambling as a means to alleviate these issues, explicitly in self-report questionnaires they often report that the only motivation to gamble is to win money (Wood & Griffiths, 2007).

There are a range of popular screens and measures currently used to evaluate gambling behaviour. Two of the most popular in recent years have been the DSM-IV and the South Oaks Gambling Screen (SOGS). However, both the DSM-IV and SOGS take an individual’s lifetime gambling behaviour and categorise the person as either pathological or non-pathological. Recent reviews of both measures (Stinchfield, 2003, Holtgraves, 2009) have questioned the validity and reliability of both screens for use in a non-clinical setting. More recently there has been a move to measure gambling behaviour on a continuum and how a person may change their gambling careers over the course of time (Cox, Enns & Michaud, 2004), for which neither the DSM-IV nor SOGS are appropriate. Neither does well at identifying people who are at different stages of problem gambling, or about to become problem gamblers (Holtgraves, 2009).

As the SOGS has been used increasingly in wider populations there has been a question over its validity and reliability in these other areas, specifically the general population. In a review of its validity and reliability Stinchfield (2003) suggested that in the general population the SOGS can show a 50% false positive. An alternative to DSM-IV and SOGS is the Problem Gambling Severity Index (PGSI). The PGSI is designed to measure a single underlying factor based on the concept of problem gambling lying on a continuum. It is designed for use in a non-clinical setting, specifically to measure problem gambling in the general population. The participants’ responses are scored in categories to identify individuals as either non problem, low, moderate or high problem gamblers.

Recent evaluations of the PGSI have found it to outperform previously well used but much criticised measures such as the South Oaks Gambling Screen (SOGS) and the DSM-IV (Holtgraves, 2009, Ben-Tovim, Esterman, Tolchard, & Battersby, 2001). The PGSI replaced the SOGS in the British Gambling Prevalence Survey 2007 and each subsequent survey (Gambling Commission, 2011, Wardle et al., 2007). In a recent review of the PGSI by Holtgraves (2009) it was summarised that particularly in a non-clinical setting, the PGSI was the recommended tool.

Self-report questionnaire measures allow access to consciously thought-out responses. The Problem Gambling Severity Index (PGSI) is designed to measure a single underlying factor based on the concept of problem gambling lying on a continuum. It is a relatively brief (nine item) questionnaire allowing the participant to answer questions about their gambling behaviour in recent months.

Simple measures of frequency and expenditure on gambling may make efficient predictors of problem gambling behaviour, but also rely on the honesty of the respondent. Self-report measures are believed to tap into recently acquired attitudes and do not always allow insight into underlying unconscious or more stable cognitive processes (Gawronski & LeBel, 2008). Self-report questionnaire measures are included in the current research to compare their findings to other methods and because they are the main tools currently employed to identify problem gamblers.

### **1.5.2 Interviews**

Another popular way of capturing self-reported attitudes and beliefs about behaviour are through interviews, allowing the participant to freely discuss and reveal aspects of their thoughts and feelings on a particular subject. Davies (1998) looked at changes in the way addicts talk about themselves and their selection of meaningful and purposeful utterances during natural conversation. He found that people did alter their language use, and narrative about current events in their lives as their behaviour moved away from addiction. The idea, stemming from different approaches in discourse analysis, is that speech acts are motivated and functional, and contain a multitude of facets which produce them, rather than simply being direct reports of internal states

of mind. He also argues that the use of verbal reports to investigate internal processes meets with problems in regard to the verbal reports being themselves a product of the processes they are attempting to describe. That whilst it is possible that people can be introspective and attempt to evaluate their own internal processes, this introspection does not enable a direct objective account of the processes in question.

Within the context of drug use, excessive use of alcohol and tobacco, and gambling, where wider social moral objections may be present, there are useful patterns of explanation and self-presentation that help alleviate responsibility and guilt from users, particularly where use of the substances may be illegal. Here the idea is that individual reports of addiction are variable and context dependent, and functional (Davies, 1998). Davies' approach is seen as a way of avoiding over interpretation of unstructured qualitative research, and the conclusion is that a person is only truly addicted when they find themselves in circumstances where it is necessary to explain their behaviour in terms of addiction. Davies (1998) examined the ways in which addicts transform the way they talk about themselves as their addiction careers change. Looking particularly at the selection of meaningful and purposeful utterances one makes regarding their status as an addict, Davies found that language use and individual narrative accounts of their behaviours did change as they moved further into or out of an addicted state. This approach incorporates a discursive view of speech acts as being motivated and functional, there is no assumption that what people are saying is a clear window giving an objective view and access to people's internal cognitive processes or states or mind. Davies argues that using verbal reports by individuals to access unclouded internal states, immediately faces problems with the verbal report being a behavioural product of the internal processes they are attempting to describe. Whilst it is possible those individuals can claim to be introspective and evaluative of their own internal processes, this does not mean that they are able to make an objective judgement, or report on the process in a way that is not biased by that process.

There is a long-standing debate in the tradition of social scientific and psychological research, over the benefits and pitfalls of ascribing to a quantitative or qualitative approach when

gathering and analysing data. This is of particular issue when dealing with individual accounts of internal processes, such as attitudes, emotions or beliefs. Davies argues that any method which relies on self-report, whether it be ticking a box, responding to a Likert scale or answering an open question, is essentially dealing with the same material and all face the same issue over the motivations and functions of a person's response, to which the researcher, and sometimes also the individual themselves may not, or cannot be party to. Davies argues that no method relying on any form of self-report can be deemed truer or capable of circumnavigating the issue that an individual may willingly or otherwise not give an honest account of attitudes, feelings, views or description of events when asked. There is always potentially a gap between report and actuality which may or may not be known by the reporter themselves, and cannot be known by the researcher. This is repeated in Orford's view that it is the struggle between thought and action that forms one of the key difficulties for an addict. However, Orford (2001) disagrees that simply self-identification and construction of an addict identity is sufficient to explain addiction, that there are, even with an acknowledgement of the role that social influences play, underlying cognitive and psychobiological processes also at play, and these might be measured objectively and quantitatively.

Wood and Griffiths (2007) argue that more research is needed that involves actually talking to gamblers. There has been a lack of qualitative research that has explored issues of problem gambling by talking to a range of gamblers. The majority of gambling research has focused on large surveys using generalised samples or experimental studies. In previous work interviewing gamblers, Wood and Griffiths (2007) adopted what they refer to as a "post positivist approach", which acknowledges the existence of specific psychological constructs, but also accepts that such constructs are open to interpretation. In their 2007 study, they interviewed fifty gamblers who had self-identified as having a gambling problem due to significant issues caused by their gambling behaviour. An established gambling screen was not used, as they argue if a gambler believes that they have a gambling problem, then it suggests that they actually do, and it

was specifically the individual's perceptions of themselves that the authors were concerned with, rather than a prescribed definition according to some pre-set gambling screen.

There is a discursive view that identity and self are constructed by individuals as they change their behaviours, and that these changes in self-identity are demonstrated in the way that people use language and discourse to self-construct (Wetherell, 2001, Derrida 1993). Narrative theory and discursive psychology have been characterized by the way individuals use language connected with many different psychological processes such as memory, meaning making, emotion, and perception. Narrative is regarded by some (e.g. Feldman et al 1990) as a fundamental characteristic of the psychological process. The narrative a person fashions for themselves enables a coherent sense of the events in their lives, direction and meaning. Narrative has emerged as a transtheoretical concept, allowing for an integrated comprehension of psychological functions (Moreira, Beutler, & Goncalves, 2008). With this in mind several studies have approached the analysis of verbal reports by examining structural changes in reports as behaviours change, rather than focusing on the legitimacy of the content offered.

Stephenson, Laszlo, Ehmann, Lefever, and Lefever (1997) explored qualitative analysis of narrative change, utilising quantitative methods. They found that success in treatment was associated with significant structural and content changes in self-narratives. Focussing on 16 recovering addicts with a variety of substance issues including drug, alcohol and food, and analysing autobiographical diaries written by the participants during their time at recovery centres, it was found that significant structural changes to narratives corresponded to successful overall treatment outcomes. One of the main methods employed for this approach was the use of the Linguistic Inquiry Word Count (LIWC). The LIWC is a computer programme that counts frequency of word use in transcripts or any written text, against a predefined dictionary incorporated into the programme. The dictionary categorises words under various factors, including personal, psychological and social. The LIWC2007 (Pennebaker, 2007) is an updated version of the original and is used as one of the analysis tools in this thesis and is described in more detail in Chapter Two. Stephenson et al (1997) also used other methods such as narrative

characterisation and evaluative statement coding, which enabled quantitative analysis of change within the written narrative accounts. This highlights the use of qualitative and quantitative methods working side by side in mixed methods research.

The findings from Stephenson et al (1997) were that certain narrative characteristics in the diaries corresponded to successful treatment outcomes. These were;

- A focus on individual progress in the narrative, whether it be a positive interpretation or a negative reactive style.
- Being less critical about themselves and being positive about others outside their treatment programme.
- Being positive about treatment and being critical of themselves.
- Using words associated with insight and negativity, as analysed and identified by LIWC.

The methodology of Stephenson et al followed a typical first step in qualitative analysis, which is to code the narratives. This revealed three narrative ‘dimensions’ which were regarded as the most reliable and comprehensive way to characterise the narratives.

The first dimension was time. Narratives were typically referring to past events, but occasionally made reference to future events, or current emotional or cognitive states. The second dimension was regarding narrative quality, which originally started with three elements, prescriptive or intentional statements, progressive or motivational statements and reactive or responding statements. These were eventually developed into two categories, one which included prescriptive and progressive statements into a category of interpretation, and the remaining reactive category. The third dimension was affective, which referred to positive, negative or neutral statements. The findings were that most patients made predominantly negative and reactive statements, but that almost half of all statements were also regarded as interpretive in some way, which was regarded by the authors as demonstrating some level of engagement in the treatment process.

Moreira, Beutler and Goncalves (2008) also looked at narrative change applying a mixed method approach utilising both qualitative data and quantitative analysis. They conducted in depth analysis of interview transcripts of patients engaged in a variety of psychotherapeutic treatments. Comparing good overall outcome cases to bad outcome cases they employed quantitative analysis of the interviews using Likert scale comparisons of various narrative dimensions. Moreira et al found significantly greater overall narrative change amongst the good outcome patients was revealed, compared to those for whom the treatments were unsuccessful.

To explore the gamblers' self-ascription and to develop a richer understanding of what gamblers have to say about their behaviours, interviews are included in the current research. From a discourse analysis perspective, there is a view that identities and notions of self are constructed and reconstructed by individuals as they change their behaviours. As behaviours, values and perspectives change, so do explanations, descriptions and construction of a narrative, and these changes are demonstrated in the ways people use their discourse as one type of behaviour changing in much the same way as other observable physical changes that are taking place (Wetherell, 2001; Derrida, 1993).

In relation to dual processing, when someone responds to a self-report regarding particularly problem behaviour which requests an 'honest' response, the individual has time to engage their System Two. The individual can then present an attitude which can be filtered by underlying goals, thoughts or concerns which when considered may affect the final response given. The individual may not even be able to distinguish between giving an honest response, and masking it under biases which find them wanting to present themselves in a better light than may truly be the case.

Self-report methods such as questionnaires or interviews are regarded as explicit measures. They are the overt conscious reporting of attitudes or beliefs by a person. As mentioned, they may be distorted by several factors, from the social desirability of the answers given, the



sensitivity of the subject matter or inability of the individual to report accurately on their own internal processes (Gawronski & de Houwer, 2014).

### **1.5.3 Implicit tasks**

An alternative to explicit self-reports is the use of implicit measures which are believed to tap into unconscious processes (dual processing System One) that affect responses to stimuli. Implicit processes include unconscious responses to stimuli that are outside of the person's conscious awareness and therefore not affected by some of the factors mentioned above, such as social desirability which may lead the participant to alter their response (Sheeran, Gollwitzer & Bargh, 2013). This is in keeping with dual processing theories which separate the conscious System Two, (which are revealed typically through self-reports) and unconscious System One which requires a different approach. The aim of an implicit task is to bypass the slower System Two, which involves consideration and control on the part of the respondent, as when replying to questions in a self-report measure or screen.

Implicit tasks typically present material that holds valence related to a behaviour or attitude of concern, and the participant is given options, or responses that require a quick response, or one which they are not privy to the possible intent of the experimenter, and so unable to offer conscious alternative responses, or withhold intuitive responses.

Previous theories, such as dual processing have examined the relationship between implicit unconscious responses and conscious self-reported attitudes and beliefs. At certain times an individual may be more capable of accurately reporting on their internal processes than others. The underlying implicit processes that influence addictive behaviour, such as automaticity or impulsivity, may continue to reside strongly at an unconscious level whilst at a conscious level the individual may desire, even believe and therefore report that behavioural changes are taking place. When in fact, without changes to the underlying implicit processes, movement out of problem behaviour is highly unlikely. This would explain to some extent the typically reported issue that many people experiencing addiction face - reporting the desire and the will to change,

but at the same time the difficulty of overcoming the underlying compulsion to continue with the problem behaviour (Gawronski & Label, 2008).

For the present research a combination of measures, including self-reports questionnaires as well as implicit tasks and interviews is adopted. It is recognised that there are theoretical questions regarding any of these approaches and their ability to provide insight into anything beyond the face value of interpretation by both the individual and the researcher. However, there is value in examining the relationship between a variety of approaches, to evaluate whether or not each approach provides a coherent account of what appears to take place in the changing behaviour of a problem gambler.

Popular implicit measures include tasks such as the Implicit Association Task (IAT) and the Affective Priming task (Karpinski & Hilton, 2001; De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009). With the IAT participants are given a combination of images or objects and words, and asked to categorise them in a reaction timed task, which measures the speed in which the participant makes the connection between the objects and words. When a connection is made more quickly, it is interpreted as being due to having stronger associations in memory between that particular object and word, than when the response is slower. These responses are regarded as intuitive and related to System One from a dual processing perspective, hence regarded as implicit. The IAT has been considered by some however as not being as much a measure of implicit attitudes as a measure of environmental exposure and associations (Karpinski & Hilton, 2001). The Affective Priming task works in similar way to the IAT, but instead of presenting the object and word simultaneously the object is presented as a prime, prior to asking whether the following word can be categorised as either positive or negative, for example. The interpretation is that when the priming object has a strong association to the valence of the word, the response will be quicker (De Houwer et al, 2009).

One of most well established implicit tasks that has been widely used in a variety of settings, including addiction, is the Stroop Task. The Stroop task has long been held to tap into

the unconscious or intuitive response that is assumed to be beyond conscious control, relating to the previously mentioned System One (Wiers & Stacy, 2006). The Stroop paradigm is believed to tap into cognitive aspects of attention and interference and demonstrate these influences on reaction times during the task. Typically, the Stroop task involves the use of congruent and incongruent colour words and font colour, e.g. the word 'red' written in blue ink, alongside words and colours that match. Participants are shown a series of congruent and incongruent word/font colour combinations and asked to ignore the word and name the font colour. It is reliably found that when the word/colour combination is incongruent, participants are slower at naming the font colour, due to the distraction of the word/colour combination (Stroop, 1935).

The Stroop task is one of the most well researched tasks which is believed to tap into attentional bias. Traditionally the Stroop task involved the naming of colour words that were written in either congruently or incongruently coloured ink as demonstrated in Figure 1.5.3.



Figure 1.5.3 Stroop Task: An example of colour word incongruence

There are a variety of explanations for the classic Stroop effect. The Relative Speed of Processing explanation refers to the interference caused by conflict between two competing response systems. Word reading is a faster and more established system than colour naming. However this has been challenged as it is based mainly on learning and research has shown that training on the task does not reverse the effect (Dunbar & MacLeod, 1984). Another explanation for the Stroop effect is that the name of the word is perceived first and this interferes with the perception of the ink colour. This has again been rejected. Congruent words tend to facilitate the reaction time when naming the ink colour, and interference size should not be affected by

congruency between words and colour of ink if the interference arises from perceptual encoding. A third explanation is that processing of words is a more well learned and therefore more automatic process than that of naming colours (MacLeod & Dunbar, 1988). The frequently used processing pathway accessing the more familiar act of reading out words will interfere with the less frequently used act of naming colours.

A similar paradigm has been used in other psychological/ emotional and behavioural settings. In emotional Stroop tasks, participants are again asked to name the font colours, while the words displayed are either neutral or emotionally salient. The emotionally salient words cause interference during the task, and typically produce slower reaction times than the neutral words. Stroop tasks for addiction have found significant effects amongst users of illegal drugs, smoking/tobacco and alcohol (Cox, Pothos & Fadardi, 2006). Consistent with work on other addictions, Boyer and Dickerson (2002) focusing specifically on Australian gambling game machine players, found that gamblers with low control over their gambling showed significant increases in their response times during a gambling related Stroop task, compared to those with high control. Conditioned responses, as mentioned have specific relevance to the use of the Stroop task as a measure of cognitive bias towards salient gambling terms. Words which would have no relevance to non-gamblers can be heavily laden with a multitude of emotional associations for a problem gambler.

Boyer and Dickerson (2002) examined the relationship between attention and gambling behaviour by measuring the level of Stroop interference towards gambling related words in a group of regular poker machine players. The Scale of Gambling choices was used to measure levels of impaired control over gambling. 60 participants were split into two groups based on their subjective impaired control. The developed gambling Stroop task involved three word categories, neutral words, drug-related words and gambling-related words. For example, Boyer and Dickerson used words such as *jackpot*, *bonus* and *pokies* in the gambling category, *bat*, *locker* and *potato* in the neutral category and *junkie*, *heroin* and *smack* in the drug category. It was found that the low control group took significantly longer to name the colour of the words relating to

the poker machine gambling, whereas the high control group showed no difference in response times across the three categories. The participants with low control over their gambling behaviour took longer to respond when presented with gambling related words, whereas the high control group showed no significant differences in their reactions to any of the word groups. This suggests that participants who self-reported low control over their gambling behaviour were more distracted by the gambling related words, leading to the delay in response times.

The Boyer and Dickerson study did not find frequency of play to provide a significant interaction with reaction time to the Stroop gambling stimuli, reinforcing the idea that it is not simply exposure or familiarity that causes word interference. It is not only how much someone plays that leads to automatic processing of gambling words. These results support the previous findings that people with problem behaviour take longer to colour name words relating to the area of their problem.

Cox, Fadardi and Pothos (2006) undertook a meta-analysis of addiction Stroop tasks, comparing and collating information on the variety of different procedures and findings from a selection of addiction Stroop tasks across different addictions, including the gambling research of Boyer and Dickerson (2002). The procedures for each study were compared across five dimensions, including word controls, such as length and frequency of use, format of testing and response modality, whether responses were recorded verbally or manually, and any manipulations that took place, i.e. asking the participants to abstain prior to testing. Each of these dimensions was found to predict effect size. The premise with addiction Stroop tasks is that the participant is to be essentially shown two different types of words, consisting of addiction related stimuli, (for example *whiskey, beer, drink*) and one neutral or non-addiction stimuli (for example *piano, table, curtain*). The words are presented in different ink colours and the participant is to identify the colour of the word and ignore the word meaning.

Addiction Stroop tasks are widely regarded as a measure of attentional bias (MacLeod, 1991). Decisions about using addictive substances are influenced by distractions from addiction

related stimuli. Studies employing addiction Stroop tasks finding the strongest effects are those where the participants had strong current concerns about addictive behaviour (Cox et al., 2006). It is expected that, if there is attentional bias towards the addiction related stimuli, this will cause measurable interference in naming the colour of the ink when faced with words with a salient association with the addiction, compared to naming the ink colour of neutral words.

Cox et al also point out that craving has never been measured prior to assessing attentional bias, even though there a significant correlation has been found between craving in the prior week and attentional bias on a heroin Stroop test (Franken, Kroon, Wiers, & Jansen, 2000). They also point out that there is a disadvantage to using generalised stimuli, in that each individual may differ in terms of their habits, behaviours and preferences in different areas of addiction. However, this seems mostly in relation to, for example, alcohol Stroop tests, where different alcoholic beverages have been used. Participants will not consume or have bias towards each beverage equally, and it is difficult to say which will affect each participant's response time and in what way. Cox et al also state that it would be particularly useful in future research to investigate whether changes in addiction attentional bias over time are accompanied by changes in urges or cravings to engage in the addictive behaviour.

Several theories attempt to explain the interference demonstrated in the addiction Stroop. The theory that currently gives the most complete account in explaining the interference observed in addiction Stroop tasks is the Theory of Current Concerns (Klinger & Cox, 2004). Theory of Current Concerns states that people's lives are organised around the pursuit of goals, and as such individuals are preoccupied with their own specific interests. These specific interests have particular associations with objects, concepts and ideas that hold more relevance for those individuals than others who do not share the same interests. Such salient items of interest continue to be attractive at an unconscious, System One level for those individuals who habitually are involved and surrounded by such items, words and concepts on a regular basis. Cox concludes that the Theory of Current concerns encompasses other explanations of attentional bias. It focuses on striving for goals and the emotional significance of stimuli relating to peoples' goal pursuits.

The validity of the Stroop addiction task has been established in a variety of ways. It distinguishes addicts from non-addicts. It has convergent validity, in that increased attentional bias for a substance corresponds with physiological reactions, e.g. heart rate changes and skin conductance. It has predictive validity; greater attentional bias predicts greater likelihood of relapse after stopping (Cox, 2002). One of the theories that have shown most potential when explaining the Stroop phenomena is within the context of automaticity. This explanation relies not so much on a speed of processing concept but rather on the level of automaticity in each process, interference arising throughout the course of processing rather than at a late response stage. The automaticity theory assumes that automated processes do not require attention and occur without monitoring (Macleod, 1991) and that practice will lead eventually to automaticity (Schneider & Schiffrin, 1977). There is a proposal that automaticity exist along a continuum (Macleod & Dunbar, 1988) and this is an integral component of perhaps the most promising model of the Stroop effect developed so far. More recently in a comparison between pathological gamblers and healthy controls, a difference in attentional bias has been found with pathological gamblers (Vizcaino, Blanco, Moratti, Fernandez-Navarro, Ponce, Navio & Rubio 2013).

## **1.6 Aims of the current research**

The focus of the current research is on what gamblers say about their behaviour during interview, implicit measures of that behaviour, and how traditional self-report questionnaires capture responses at the same time. The research explores what the relationships are between these methods, and if they change over time. It is anticipated that there will be significant relationships between elements of each of these methods that will add to the understanding and identification of problem gambling. It is expected that over time, as gamblers change their behaviours, these changes will be observed across the different methods of enquiry and relationships between different methods will be revealed.

Wood and Griffiths (2007) recommend that the next step in gambling research is to examine gambling behaviour with multiple measures. The aim of the current research is to explore the relationships between the more commonly used self-report questionnaire measures of elements associated with problem gambling, including gambling type, frequency and expenditure and the Problem Gambling Severity Index (PGSI) which tap into conscious ‘System Two’ aspects of gamblers’ behaviour. The potential contribution of the implicit measures (the newly developed Gambling Stroop Task and the new Roulette MouseTracker Task detailed in Chapter Two) which tap into unconscious ‘System One’ responses will also be investigated. If the implicit measures can indeed tap into differences in unconscious processes that are intimately linked to gambling behaviour, then they will be useful predictors of problem gambling as measured by the PGSI.

Furthermore, if these implicit tasks are in fact able to measure processes that are independent of those that consciously affect gambling behaviour then they might be able to significantly improve prediction of PGSI scores over and above that provided by assessments of self-reported regularity and extent of gambling behaviour. This does not discount the usefulness of asking an individual to report on their conscious awareness of behaviours, but also adds a dimension of measuring unconscious processes which the individual may not be aware of at all.



The first aim is to explore a variety of methods when identifying problem gamblers and look for relationships between the methods which may give a coherent and more comprehensive understanding of problem gamblers. These are:

- Self-report questionnaire measures – asking gamblers to consider gambling behaviours and attitudes, and report in ways that allow quantitative measures of those behaviours.
- Interviews – qualitative approaches, exploring what gamblers say about their behaviour.
- Implicit measures – using tasks that theoretically tap into underlying cognitive processes and exploring methods of identification that are beyond the conscious control of problem gamblers, to avoid the prospect of dishonest or inaccurate self-reporting.

The second key aim of the work is to follow gamblers longitudinally as they move in and out of problem levels of behaviour and evaluate how the various measures and methods correspond with that movement.

#### **1.6.1 Research questions**

- What is the relationship between various measures and methods; does it produce a coherent account of gambling addiction in keeping with theories of addiction, gambling and behaviour change?
- Are there methods that give insight into problem gambling that do not rely on self-reports alone?
- Is anything revealed in gamblers' discourse that may enhance understanding of problem gambling?
- Do these elements change over time and help understanding of changes to behaviour and addiction amongst gamblers?

In summary, the goal of the current research is to consider the relationship between explicit (both self-report questionnaires and interview) and implicit (Gambling Stroop and Roulette MouseTracker Tasks) measures of gambling. It will then examine whether any of these, or a combination of these, might offer a reliable predictor of problem gambling. It is expected that all methods will reveal components that contribute to the identification of problem gambling, and using a variety of methods will add to a coherent understanding of gambling addiction.



# Chapter Two: Method

## **2.1 Design**

The main aims of the thesis are to examine the predictive power of a range of methods (self-reports questionnaires, interviews and implicit tasks) both individually and in tandem to characterise problem levels of gambling behaviour and changes in that behaviour as gamblers fluctuate in the degree of control they exercise over time.

As mentioned in Chapter One, there is a contemporary view of gambling behaviour lying along a continuum with gamblers moving in and out of problem levels of behaviour (Cox, Enns, & Michaud, 2004). It has also been recommended that gambling research should examine gambling behaviour longitudinally with multiple measures as a means of understanding this complex and multi-faceted behaviour (LaPlante et al., 2009).

The current research, therefore, follows a longitudinal correlational design, engaging regular gamblers at three-month intervals over a two-year period, with multiple continuous measures of their gambling behaviours. At each three-month interval the same measures were applied in a repeated measures design to establish if change occurred, and to understand the relationship between measures and variables over time.

## **2.2 Recruitment of participants**

As the current research was concerned not only with relationships between a variety of measures, but also with how these measures might reflect changes over time, the aim was to recruit participants who were regular gamblers, of any type of gambling activity, who gambled

regularly (a minimum of once per week). From these broad criteria it was expected that a range of gamblers, with varying degrees of gambling involvement and experiences would be recruited. Regular gamblers with no current problem behaviours were just as important for the research design as those with current problems. As mentioned in Chapter One, a key point of interest was to observe if self-reported changes in frequency, type and involvement in gambling could be seen in individuals along the PGSI continuum over time. Therefore, there was no specific level of problem gambling at which participants were expected to be at the time of recruitment, but it was anticipated that some participants would change in their levels of problem behaviour, either positively or negatively over the duration of the research.

Based on recent findings in the British Gambling Prevalence Survey (Wardle et al., 2011) men are three times more likely than women to be at-risk from problem gambling. Single people are less likely to gamble than married people; however, they are more likely to be problem gamblers (1.3% vs 0.2%). Age and household income are not found to be indicators of problem gambling, however younger gamblers are significantly more likely to change their gambling behaviours during a short period, than older gamblers who have been gambling for a longer time and whose behaviours are more stable. Certain gambling activities are more strongly associated with problem gambling, such as spread betting and the use of fixed odds betting terminals (FOBTs), however past week gambling involvement (frequency, number of different gambling activities and expenditure) is also a strong indicator of problem gambling. The prevalence rates of problem gambling are approximately double amongst regular gamblers who gamble at least once a week, compared to gamblers who state only gambling once in the past year. Of those who gamble at least once a week, the percentage of problem gambling increases incrementally as the number of gambling days per week increases. See Table 2.2 for a summary of the BGPS (2010) data.

Table 2.2 Percentage of regular gamblers self-reported problem gambling and gambling frequency (Wardle et al., 2010)

Frequency of gambling activity	% of problem gamblers
< Once a month	0.1%
Once a month	0.3%
Once a week	0.6%
2-3 days per week	1.7%
>3 days per week	10.6%
Everyday	14.7%

The aim was to recruit 60 regular gamblers. Participant eligibility was based on being over 18 years and regularly undertaking at least one form of money gambling on a weekly basis. Based on some of the findings described above, it was anticipated that by recruiting gamblers who participated at least once per week, that a range of gamblers would be recruited with differing levels of problems and different levels of engagement. As the aim of the current research is not to simply identify problem gamblers, but also those who may potentially move into problem levels of involvement, it was deemed important not to pre-select participants by focusing on only the characteristics which are already associated with problem gambling. As both male and female participants were being recruited and preference for different gambling forms has been identified between sexes, again in order not to exclude participants, a full range of gambling activities were recruited from.

Different recruitment methods have been found to attract different types of gamblers (Williams, Pulford, Bellringer, & Abbott, 2010). It is recommended by Williams et al. (2010) that

a variety of recruitment strategies are used in order to obtain a range of participants with different levels of gambling involvement. It has been found for example, that problem gamblers are more likely to be recruited by advertisement than active solicitation, compared to non-problem gamblers. Therefore, the current research utilised a range of different methods. Participants were recruited from the North East of England, through face to face recruitment in gambling establishments including bookmakers, casinos and amusement arcades. Further recruitment involved online advertising via online gambling forums and classified advertising. Contact was also made with social gambling groups and gambling support groups, and participants were also recruited within a North East University. The majority of participants were responding directly to one of the recruitment strands. However, several participants were referred either by acquaintances or staff from gambling establishments.

Gamblers are not a homogenous group (Blaszynski & Nower, 2002) and it is not reasonable to categorise all regular gamblers by the same criteria. However, as mentioned one of the key aims of this research is to follow movement amongst individual gamblers who may change their gambling preferences and levels of problem behaviour. Identification of the elements that predict this change and the range of measures used, require that a broad range of gambling activities, levels of involvement and demographic attributes be accepted in the first instance, if there is then to be exploration of the contributing factors that may identify why certain gamblers move along the problem gambling continuum.

### **2.3 Overview of measures**

Table 2.3 gives an overview of the methods employed. Participants' scores on self-report questionnaire measures of gambling involvement and financial expenditure and scores on implicit tasks (the new Roulette MouseTracker Task and Gambling Stroop Task) were collected as potential predictors of self-reported problem gambling behaviours as measured using the Problem Gambling Severity Index (PGSI). The self-report questionnaires included a range of established measures of gambling behaviour as well as measures of dissociation and fallacious beliefs about

gambling. Each measure gathered a score along a continuum, and regression was employed to reveal predictors of problem gambling (PGSI). Alongside the self-report questionnaire and implicit task data, short (15 – 20 minute) semi-structured interviews were conducted asking participants about past and present gambling behaviour in order to gain in depth qualitative data. After transcription, the 60 initial interviews were analysed using Linguistic Inquiry Word Count software (Pennebaker, Booth & Francis, 2007), which provides a numeric analysis of qualitative data, examining word use and frequency. The output from the LIWC provides quantitative data on continuous scores which have also been analysed using correlational design and regression.

The study also then followed a longitudinal repeated measures approach to allow all the measurements to be explored with individuals over time. The participants were invited back, after their initial session, at three-month intervals to complete the same tasks, questionnaires and interviews for comparison. Participants attended several sessions across the two-year parameter of the research project. Further in depth qualitative analysis of key participants was finally conducted, specifically exploring the qualitative expressions of those participants who demonstrated the greatest change during the process, and/or the highest levels of problem behaviour.

This chapter will detail the research design, rationale and data collection methods employed in the rest of the thesis. As each method is introduced the materials and procedure will also be given in detail. A summary of the overall procedure for a typical participant session will be provided at the end of the chapter.



Table 2.3 Overview of methods, measures, theoretical construct and analysis

Methodological approach	Measure	Dual Processing System	Analysis
Self-Report questionnaires		System Two	
	1) Demographics.		Correlation/Regression
	2) Gambling Frequency and Participation.		Correlation/Regression
	3) PGSI.		Correlation/Regression
	4) Fallacious Beliefs.		Correlation/Regression
	5) Dissociation.		Correlation/Regression
Self-report interviews	Linguistic Enquiry Word Count	System Two	Qualitative - Interpretative Phenomenological Analysis Correlation/Regression
Implicit response		System One	
	1) Stroop Gambling Task		Correlation/Regression
	2) MouseTracker Roulette Task		Correlation/Regression

## **2.4 Explicit measures**

A self-report questionnaire on gambling was created based on the British Gambling Prevalence Survey (BGPS) (Wardle et al, 2010). This included questions on demographics, gambling type and frequency and levels of engagement in gambling. The structure and content of the questionnaire was derived from the gambling categories referred to in the BGPS, as this covered all common money gambling activities in the UK. The questionnaire also incorporated questions regarding demographics, as well as past twelve-month, three-month and past week activities, past week time spent gambling and money spent. The demographic questions are shown in Figure 2.4 and the gambling activities questions in Figure 2.4b. Each participant was asked during the initial session to indicate the number of different activities they engaged in for the past twelve-months, three-months and past week. In subsequent sessions only past three-months and past week questions were asked.

**Participant number-**\_\_\_\_\_ **Date -** \_\_\_\_\_

## **Demographics**

Age \_\_\_\_\_

D.O.B. \_\_\_\_\_

Gender (circle as appropriate) - M/F

Relationship status (circle as appropriate) - Married or living as married/  
Single/Other /  
Separated or divorced

Employment status (circle as appropriate) - Paid work/ Unemployed/Long term  
disability/ Retire /Looking after Family/ /Full time education/ Other

Ethnicity (circle as appropriate) – White-White British/Asian-Asian British/Black-  
Black British/Other

Education– how many years of education have you had from the age of five? (11  
years compulsory - 5 to 16 years) \_\_\_\_\_

Figure 2.4 Demographic questionnaire

## Past Twelve-months Gambling Activities

Please indicate with an X on the table below which of the following activities you have taken part in the last 12 months.

Gambling Activity	Past 12 months
National Lottery	
Another Lottery	
Scratch cards	
Football Pools	
Bingo	
Slot Machines	
Horse Races	
Dog Races	
Betting with a bookmaker (not online)	
Fixed Odds Betting Terminals	
Online Betting with a bookmaker	
Online Gambling	
Table top games in a casino	
Betting exchange	
Spread Betting	
Private betting with friends or colleagues	
Another gambling activity	

## Past Three-months Gambling Activities

Please indicate on the table below which of the following activities you have taken part in the last three-months.

Gambling Activity	Month 1	Month 2	Month 3 (most recent)
National Lottery			
Another Lottery			
Scratch cards			
Football Pools			
Bingo			
Slot Machines			
Horse Races			
Dog Races			
Betting with a bookmaker (not online)			
Fixed Odds Betting Terminals			
Online Betting with a bookmaker			
Online Gambling			
Table top games in a casino			
Betting exchange			
Spread Betting			
Private betting with friends or colleagues			
Another gambling activity			

## Past Week Gambling Activities

Please indicate which of the following activities you have taken part in the last week

Gambling Activity	Mon	Tue	Wed	Thu	Fri	Sat	Sun
National Lottery							
Another Lottery							
Scratch cards							
Football Pools							
Bingo							
Slot Machines							
Horse Races							
Dog Races							
Betting with a bookmaker (not online)							
Fixed Odds Betting Terminals							
Online Betting with a bookmaker							
Online Gambling							
Table top games in a casino							
Betting exchange							
Spread Betting							
Private betting with friends							
Another gambling activity							

Approximately how much MONEY have you spent on gambling in an average week? \_\_\_\_

Approximately how much TIME have you spent on gambling in an average week? \_\_\_\_\_

Figure 2.4b Gambling activities questionnaire

As discussed during the introductory chapter, there are questions regarding the reliability of self-report measures, and in particular of using self-reports amongst problem gamblers, who as a group are acknowledged to often hide or misrepresent the extent of their gambling behaviour. Indeed this is one of the criteria used to identify problem gambling in diagnostic tools such as the current DSM-5. However, it is vital that a self-report measure be included as a key aim of this research is to explore the relationship between measures, including self-reports, and discover whether self-reports of problem gambling contribute to a broader understanding of problem gambling behaviour. Popular gambling self-report instruments for problem gambling have been reviewed in Chapter One (1.5.1). The instrument selected for the current research is the Problem Gambling Severity Index.

#### **2.4.1 Problem Gambling Severity Index (PGSI)**

The Problem Gambling Severity Index (PGSI) was developed by Ferris and Wynne over three years 1997-2000. This included testing and validation with a sample of over 3000 people. The PGSI is a shortened version of the Canadian problem gambling inventory. It is a 9 item questionnaire, allowing the participant to answer questions regarding the last 12 months' activities, focusing on money and emotion. It is designed for use in a non-clinical setting, specifically to measure problem gambling in the general population. The answers are scored to categorise gambling behaviour as either 1) non problem, 2) low problem, 3) moderate problem or 4) high problem gambling.

The PGSI overlaps with the DSM-IV and the SOGS to some extent. Some of the questions have been adapted from either the DSM-IV or the SOGS, rewording certain items to alter the positioning of the questions. A review of the PGSI and DSM-IV was made in 2010, in direct comparison, as both were used in the 2007 British Gambling Prevalence Survey. With over 5000 participants, the findings were that the PGSI gave high internal reliability, uni-dimensionality and good item response characteristics. The DSM gave only satisfactory internal reliability, evidence of bi-dimensionality and poor performance on at least two items (Orford,

Wardle, Griffiths, Sproston, & Erens, 2010). A review of the PGSI (Holtgraves, 2009) concluded that, particularly in a non-clinical setting, the PGSI was recommended as an alternative to the SOGS. The PGSI was theoretically designed to measure a single problem gambling factor based upon the view of problem gambling on a continuum. This also suggests the possibility of tracking changes in problem gambling severity longitudinally along a particular pathway. To summarise the PGSI:

- It is suitable for use in non-clinical settings
- It approaches problem gambling as lying on a continuum
- In recent comparisons between variety of measures and screens the PGSI has outperformed all others in terms of reliability and validity

For these reasons the PGSI was elected as the problem gambling measure for the current research.

The original PGSI is shown in Figure 2.4.1.



### **Problem Gambling Severity Index**

This self-assessment is based on the Canadian Problem Gambling Index. It will give you a good idea of whether you need to take corrective action.

#### **Thinking about the last 12 months...**

**Have you bet more than you could really afford to lose?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Still thinking about the last 12 months, have you needed to gamble with larger amounts of money to get the same feeling of excitement?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**When you gambled, did you go back another day to try to win back the money you lost?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always

**Have you borrowed money or sold anything to get money to gamble?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Have you felt that you might have a problem with gambling?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Has gambling caused you any health problems, including stress or anxiety?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Has your gambling caused any financial problems for you or your household?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

**Have you felt guilty about the way you gamble or what happens when you gamble?**

0 Never. 1 Sometimes. 2 Most of the time. 3 Almost always.

#### **TOTAL SCORE**

Total your score. The higher your score, the greater the risk that your gambling is a problem.

Score of 0 = Non-problem gambling.

Score of 1 or 2 = Low level of problems with few or no identified negative consequences.

Score of 3 to 7 = Moderate level of problems leading to some negative consequences.

Score of 8 or more = Problem gambling with negative consequences and a possible loss of control.

Figure 2.4.1 Original PGSI (Ferris & Wynne, 2001)

Typically, the PGSI asks for questions to be answered on the basis of the past twelve-months. For the current research this was adapted to refer only to the previous three-months in keeping with the session intervals in the research design. Explicit reference to problem gambling was removed from the questionnaire when used with the participants, to reduce responder bias by presenting the questions in a non-judgemental way. The version of the PGSI used in the current research is shown in Figure 2.4.1b.

**Participant Number - \_\_\_\_\_ Date - \_\_\_\_\_**

**Thinking about the last 3 months...** Please respond to the following items by circling the one option that best describes the way you feel

1. Have you bet more than you could really afford to lose?

Never      Sometimes      Most of the time      Almost always

2. Still thinking about the last 3 months, have you needed to gamble with larger amounts of money to get the same feeling of excitement?

Never      Sometimes      Most of the time      Almost always

3. When you gambled, did you go back another day to try to win back the money you lost?

Never      Sometimes      Most of the time      Almost always

4. Have you borrowed money or sold anything to get money to gamble?

Never      Sometimes      Most of the time      Almost always

5. Have you felt that you might have a problem with gambling?

Never      Sometimes      Most of the time      Almost always

6. Has gambling caused you any health problems, including stress or anxiety?

Never      Sometimes      Most of the time      Almost always

7. Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?

Never      Sometimes      Most of the time      Almost always

8. Has your gambling caused any financial problems for you or your household?

Never      Sometimes      Most of the time      Almost always

9. Have you felt guilty about the way you gamble or what happens when you gamble?

Never      Sometimes      Most of the time      Almost always

Figure 2.4.1b Adapted PGSI questionnaire

The questionnaire was scored never =0, sometimes = 1, most of the time = 2, almost always = 3 for each question. Each participant was then given a total score which was the sum of all responses.

### **2.4.2 Fallacious beliefs and dissociation**

Chapter One highlighted key cognitive factors identified as having particular relevance when dealing with gambling as an addiction. One of these is cognitive biases, referred to here under the term ‘fallacious beliefs’ (FB). These include concepts such as illusion of control (Langer, 1975) and gamblers’ fallacy (Tversky & Kahneman 1976). Problem gamblers are more likely to display fallacious beliefs than non-problem gamblers; see Chapter One (section 1.2).

The second element considered in this section is dissociation, again discussed previously in Chapter One (1.3). Dissociation has been found to have strong links with gambling and the prediction of problem gambling (Gupta & Derevensky, 1998; Wood, Gupta, Derevensky, & Griffiths, 2004).

The Fallacious Beliefs Questionnaire and Dissociation Questionnaire used in the current research have been developed by Laurie (2000), by selecting key questions from the larger 35 item Gambling Attitudes and Beliefs Scale (GABS) (Breen & Zuckerman, 1999). Laurie conducted confirmatory factor analysis on the fallacious belief questionnaires and dissociation questionnaires alongside loss of control measures in his research, to confirm the relationship and factors which might influence and interact with individuals’ gambling behaviour. Validation and effectiveness studies into the GAB, reveal key questions which score highly in relation to the two areas of dissociation and fallacious beliefs (Strong, Breen, & Lejuez, 2004; Strong, Daughters, Lejuez, & Breen, 2004), and it is these key questions which have been used in the two respective questionnaires in the current study. Each questionnaire contains gambling-specific questions which make reference respectively to an individual’s misunderstanding of control during gambling tasks, belief in gamblers’ fallacy and different degrees of dissociation achieved during gambling or gambling related behaviours.

The questions selected for the dissociation measure are shown in Figure 2.4.2

The questions selected for the fallacious beliefs measure are shown in Figure 2.4.2b.

10. Gambling makes me feel really alive.				
Strongly agree	Agree	Disagree	Strongly disagree	
11. Sometimes I forget about the time when I am gambling				
Strongly agree	Agree	Disagree	Strongly disagree	
12. I get a real buzz that lifts me when I gamble.				
Strongly agree	Agree	Disagree	Strongly disagree	
13. Whilst gambling I feel I'm free, able to do and choose what I like.				
Strongly agree	Agree	Disagree	Strongly disagree	
14. I feel less stressed when I gamble				
Strongly agree	Agree	Disagree	Strongly disagree	
15. Whilst I'm in the gambling environment, I usually don't notice what other people are up to.				
Strongly agree	Agree	Disagree	Strongly disagree	
16. As soon as I start gambling I feel different to how I did before.				
Strongly agree	Agree	Disagree	Strongly disagree	
17. If I were feeling down, gambling would probably pick me up.				
Strongly agree	Agree	Disagree	Strongly disagree	
18. I like gambling because it helps me to forget my everyday problems				
Strongly agree	Agree	Disagree	Strongly disagree	

Figure 2.4.2 Dissociation questions

19. If I have not won any bets for a while, I am probably due for a big win.	Strongly agree	Agree	Disagree	Strongly disagree
20. I know when I'm on a streak.	Strongly agree	Agree	Disagree	Strongly disagree
21. It is important to feel confident when I'm gambling.	Strongly agree	Agree	Disagree	Strongly disagree
22. No matter what the game is, there are betting strategies that can help you to win.	Strongly agree	Agree	Disagree	Strongly disagree
23. I have carried a lucky charm when I gambled.	Strongly agree	Agree	Disagree	Strongly disagree
24. I must be familiar with a gambling game if I am going to win.	Strongly agree	Agree	Disagree	Strongly disagree
25. To be successful at gambling, I must be able to identify streaks.	Strongly agree	Agree	Disagree	Strongly disagree
26. I sometimes find myself saying or thinking "I feel that I'm going to win this time".	Strongly agree	Agree	Disagree	Strongly disagree
27. I sometimes find myself saying or thinking "I knew it was going to be that, I said so".	Strongly agree	Agree	Disagree	Strongly disagree
28. I sometimes find myself saying or thinking "How come I didn't win?"	Strongly agree	Agree	Disagree	Strongly disagree
29. I sometimes find myself saying or thinking "This time wasn't very good; I could have played better."	Strongly agree	Agree	Disagree	Strongly disagree

Figure 2.4.2b Fallacious beliefs questions

The fallacious beliefs and dissociation questionnaires were scored strongly disagree =0, disagree = 1, agree = 2, strongly agree = 3. The responses for each question were then totalled for each participant on each measure, to give an overall score for dissociation and an overall score for fallacious beliefs.

### **2.4.3 Interview**

There has been a distinct lack of qualitative research that has examined problem gambling in the context of talking to and understanding problem behaviour (Wood & Griffiths, 2007). Several approaches to addiction theory discussed previously highlight the importance of personal identity, self-construction of an addict concept, and also the individual's understanding of wider social interactions, such as family support or environmental contributions affecting problem behaviour (Orford, 2012, Davies, 1998). Such elements are not always captured by quantitative self-report data, and so a proportion of the methodology for this research involved semi-structured interviews.

Semi -structured interviews were developed and adapted following recommendations from "Questionnaire development for a longitudinal study of gamblers" (Wardle, Dobbie, Kerr and Reith, 2009). In this approach to developing an interview schedule for use longitudinally with gamblers, Wardle et al. were aiming to answer two main research questions: what were the motives for gambling? And what were triggers for behaviour change? The interview schedules of Wardle et al were originally developed for in depth interviews explicitly with subjects who had been identified as problem gamblers, and their questions reflected this aspect. The Wardle et al interviews were also expected to last approximately one hour and another follow up interview schedule was developed for one further visit.

The current interview strategy was developed to be more open to a range of gamblers, without any assumption of problem behaviour and to be used in the same format at each three-month interval. It was designed to follow three main aspects of the participants' gambling behaviour; asking about previous gambling, current gambling and views toward future involvement. Participants were also encouraged to discuss the wider effects and involvement of their gambling in respect to family and friends, skills and strategies, likes and dislikes and the positive and negative effects of their gambling behaviour to both themselves and others around them. It was intended for each interview to last between 15-30 minutes and for the questions to

be relevant for each session as participants returned after each three-month period. It is acknowledged that in previous research, longer interviews have sometimes been employed, however due to the complex nature of the current research, the multiple measures incorporated, and the repeated visits requested of each participant, it was decided that a more concise approach to interviewing would be beneficial by both appealing to the participants in terms of time involved for each session (this reducing the risk of a high attrition rate) and focussing on only a relatively brief three-month period at each session. It has also been identified by Davies (1998) that narrative change amongst addicts during interview can typically be identified during the first fifteen minutes of interview.

The interview schedule is shown in Figure 2.4.3. The initial interviews contained questions on the origins and development of gambling for the individual that were not repeated in subsequent sessions. Questions were intended to be open and neutral, avoiding any bias toward either a negative or overly positive connotation in the context of gambling. If questions were directly asked about negative aspects, they were accompanied by a balanced question regarding the similar positive aspects. The schedule was intended as a basic structure and participants were encouraged to talk as much as they wanted around the subject, introducing new factors and points which they felt important to the subject matter. The interviewer previously had private practice experience from a talking therapies background, with insight into developing a good rapport with participants and delivering open, judgement free questions and discussion.



### **Guide for interviews:**

Introduction; background information of study. Introduce self; explain the purpose of the study and the longitudinal nature of the research. Explain format; open questions, no right or wrong questions, confidentiality and right to withdraw. Each interview to last approximately 15-30 minutes. Recording interview; check consent, explain anonymity and use of quotations.

### **Questions asked only at the first interview**

The Interview aims to explore:

- Participant background; e.g. employment, home, family etc., other pastimes
- Reasons to gamble, events, causes
- The frequency of gambling, type of gambling
- The factors associated with high or low periods of gambling activity
- Positive and negative affect
- Attitudes to winning or losing
- Feelings associated with gambling
- Views of the future
  
- **Background**
  - Tell me a little bit about yourself?
  - Living circumstances, type of home environment, length of time at current residence
  - Who else lives in the household, and what is the relationship between them
  - Day to day activities, employment, social activities. Describe a typical week?
  - Support networks (partner, family, friends). Tell me about the people in your life?
  
- **Gambling**
  - What was your first awareness of gambling, possibly even before you actually started gambling yourself?
  - First gambling experience, who with, why, what, likes and dislikes?
  - What made you continue?
  
- **The following questions are to be asked at the first interview and then again at each three-month session as appropriate**
- **Significant events**
  - Have there been any unique or unusual significant events recently / since the last meeting, marriages, separations, births, deaths. Changes in work or social activities?
  - What is the most interesting thing that has happened to you recently / since we last spoke?
  
- **Gambling specific questions**
  - Have you noticed any changes in your gambling behaviour since a) you started gambling? b) we last spoke?
  - What do you currently play?
  - How often?
  - Who with?
  - What influences your decision to play? Positive and negative drivers to play. Positive and negative reasons to not play. Is play planned or spontaneous?
  - Likes and dislikes about gambling, what do you like most (apart from winning)? What one thing would you like to change (apart from losing)?
  - Amount of time and money spent on gambling, approximately. Do you think it is high or low, or just normal?
  - Attitudes to wins and losses. How do they feel?
  - Luck and chance. How much do you feel in control? Do you have particular skills or strategies that help? Do you have any superstitions or habits?
  - How do you limit money? How do you limit time? What rules do you have about how much you gamble?
  - How do you feel about your gambling?
  - How do you think other people you know feel about your gambling?
  
- **Closing questions**
  - What do you think you will be doing at the next interview? Do you foresee any changes taking place? In social life, day to day activities, or gambling.
  - What would you like to be doing?

**Figure 2.4.3 Interview schedule**

## **2.5 Implicit measures**

During the introduction there was discussion of some of the issues of self-reported behaviour and also how recent models of addiction, such as dual processing, have highlighted the relationship between conscious, explicit behaviour and unconscious, implicit behaviours (Wiers & Stacy, 2006). To explore this further and to examine the relationship between implicit behaviours and conscious self-reports, two new implicit tasks have been introduced as continuous measures of unconscious System One responses to gambling related stimuli.

### **2.5.1 Gambling Stroop Task: Development**

The Stroop task is a long established measure believed to tap into implicit responses. As discussed in Chapter One there have been several explanations of the Stroop effect (see section 1.5). The Theory of Current Concerns (Klinger & Cox, 2004) suggests that individuals are affected by salient words (related to their current concern, or goal), causing attentional bias and therefore delay in responding during a Stroop reaction timed task. It has been utilised across many cognitive, emotional and addictive domains and has been developed here specifically as a specific implicit measure of gambling behaviour.

Previous research has utilised the Stroop task when testing gamblers (Boyer & Dickerson, 2006), however the design was aimed specifically at one type of gambling activity in Australia, poker based slot machines, or ‘pokies’. This was not directly translatable to the current research for two reasons. First, the word selection for the task was based specifically for the Australian ‘pokie’ players, and contained specific terms and colloquialisms which would not be understood by British gamblers, even if they played poker based slot machines. Secondly, the current research is testing a range of gamblers across gambling forms. It is acknowledged from evidence in the British Gambling Prevalence Survey (Wardle et al., 2011) that whilst there are certain gambling activities that may be more common amongst problem gamblers, one of the key identifying factors was the number of different activities that gamblers took part in. It is likely that someone increasing their problem gambling levels, or reducing them, may engage in a greater, or fewer

numbers of weekly activities, across a broad gambling repertoire. In order to produce a measure that would be applicable to the full range of gamblers taking part in the current research, a measure that was relevant to the broadest possible range of gambling activities was deemed most appropriate. For these reasons it was decided not to simply adopt the Boyer Dickerson task.

### **2.5.2 Gambling Stroop Task: Methodological recommendations**

Cox, Fadardi and Pothos (2006) made certain recommendations for maximising the sensitivity of the addiction Stroop task. They undertook a meta-analysis of addiction Stroop tasks, comparing and collating information on the variety of different procedures and findings from a selection of addiction Stroop tasks across different addictions. Although studies initially looked at involved alcohol, smoking, illicit drugs and gambling; only alcohol and smoking were used in the meta-analysis due to a lack of studies in the other two categories.

A meta-regression analysis was conducted, comparing the procedures for each study, and key factors were identified as predictors of a Stroop effect. The first key factor to consider is word control. As the number of different linguistic dimensions controlled for increases, so does the effect size. They state that caution should be taken particularly when selecting the word stimuli. Several characteristics of the words used in the Stroop task can cause interference or distraction from the task, delaying response times. To ensure that the interference can be attributed to the addictive dimension of the word, other characteristics must be controlled for. So wherever possible the salient and neutral words should be matched on:

- Word length
- The number of words used in each category
- Frequency of word use in everyday speech
- Semantic relatedness

Of these characteristics it seems that word frequency affects interference the most, i.e. words that appear more frequently cause more interference than those that appear less frequently (Burt, 2002). Semantic relationships between words are also important, such as *rush, quick, fast*; the semantic relatedness is thought to cause slower reaction times because of a priming effect amongst related concepts (Warren, 1972). Therefore, because the salient words belong to one semantic group or category (gambling), it is recommended that the neutral words should also belong to one group/category to ensure that the effect is not simply to do with the priming caused by related concepts. The size of word groups needs to be equal between categories also; if there is a larger group of salient words then participants may develop ways of avoiding distraction. The classic Stroop test finds that colour related words affect reaction times, e.g. *Sky, tomato, daffodil*; therefore, colour related words should also be avoided.

The second factor was the test format used, i.e. display cards, or computer generated tasks. It was found that in research using card formats there was a greater effect. Card based tasks have been found to produce larger interference (Kindt, Bierman, & Brosschot, 1996), however, as previously mentioned, computer format tasks have an advantage when handling and analysing large amounts of data. Grouped presentation of salient stimuli is preferable to randomisation. The number of stimuli in each category should be the same. Four possible response choices are optimal, rather than having too few or too many. Both very long and very short tests should be avoided, as they reduce size of interference.

The response modality of the participants also has an effect, i.e. do the participants respond manually, or vocally, or both. A combination of modalities is recommended as this not only gives the optimal effect, but also has methodological benefits when capturing data. In the classic Stroop test, oral responses have shown greater interference than manual responses (MacLeod, 1991). However, Nielson had previously reported that a combination of both oral and manual response increased difficulty and also interference (1975). Block presentation of trials, i.e. salient words in one block and neutral words in another, has been found to produce greater overall interference. On addition Stroop tasks, longer response times have been due to

‘rumination’ over the salient stimuli (Waters, Sayette, & Wertz, 2003). However, there are clear methodological advantages to using computers; primarily that the data is recorded automatically and then easier to process.

As well as the recommendations from Cox et al, there has also been an in-depth investigation of the effects of lexical characteristics of emotional Stroop words, looking at the equivalence of words used in emotional Stroop tasks. There are two key tasks in measuring the effects of lexical characteristics on word recognition. Firstly ‘lexical decision latency’ – participants are presented with a string of letters and have to decide as quickly as possible whether they form a word or a non-word. Secondly ‘Word naming speed’ – participants are simply presented with a word and asked to name the word as quickly as possible out loud (Larsen, Mercer, & Balota, 2006). Frequency of word use is a strong correlate with lexical decision time. One of the most commonly used measures of word frequency is that published by Kucera (1967). For instance this word frequency database was used to aid word selection in previous gambling Stroop tasks (Boyer & Dickerson, 2003). The norms and frequencies have been established from over 1 million words from a wide variety of American English texts. However, they are now over four decades old. More recently frequency norms have been collated in the work on the Hyperspace Analogue Language (HAL). These norms are based on 131 million words collected in 1995, and are seen as stronger predictors of lexical decision time than those of Kucera (Lund & Burgess, 1996). As previously mentioned, word frequency is an important feature because infrequently used words take longer to recognise than frequently used words. Therefore, in Stroop tasks word frequency is an important factor. If the emotionally salient words are less frequently used than the control words, there will be a spurious interference result. Another influencing feature of word recognition speed is word length. In general, longer words take longer to process than short words. Again if the emotionally salient words are longer in letter length than the control words, it would again produce a higher interference which was due to spurious factors.

The third word feature that contributes to word recognition speed is orthographic neighbourhood (ON) size. This is the number of words into which the original word can be changed into by altering one letter, while maintaining the position of the other letters. E.g. *word*

and *ward*. Words with large orthographic neighbourhoods tend to produce faster response latencies in some studies. However, this effect appears moderated by word frequency. One explanation of this is that words with large ON's contain more semantic links and therefore facilitate processing speed. So, if in Stroop tasks, the salient words have smaller ON's than the controls, the interference will be greater. The differences in word recognition effects due to these three main lexical differences can be evaluated in emotionally opposite words. For example, the frequency with which negative words such as *betrayal*, *crisis*, *danger* etc. can be compared to *avenue*, *field*, *path* etc. When examined in HAL, frequencies of the neutral words were almost twice that of the negative words. However, when comparing to condition specific words, the same comparisons can not necessarily be made. Since condition specific words, for example gambling related terms, used by gamblers, should be expected to have a higher frequency of use than is found in normal language use by non-gamblers.

A relatively recent database for lexical decision time and word naming and lexical characteristics is the English Lexicon Project. It is this data base that has been used for matching the words selected for the current Stroop gambling task (Balota et al., 2007).

### **2.5.3 Gambling Stroop Task: Word selection**

Initially, a selection of online glossaries of gambling terms were used to find common gambling terms used across a range of gambling activities from both UK based and international gambling websites. These included both British and American English gambling words and terms that regular UK gamblers may be familiar with.

<http://www.gamblingdictionary.com/>, [http://www.ildado.com/casino\\_glossary.html](http://www.ildado.com/casino_glossary.html),  
<http://www.paulaura.com/betgloss.htm>, <http://www.vegasinsider.com/gaming-terms/>,  
<http://www.online-betting.me.uk/betting-a-to-z.html>, <http://www.jackpot.co.uk/gambling-glossary>

A total of 90 commonly used gambling words were selected based on their frequency of occurrence across the range of online sources used.

Following recommendations from Cox et al discussed above, matches for the gambling words were then found using the English Lexicon Project (Balota et al, 2002), matching words on length, frequency, orthographic neighbourhood and morphemes. This gave approximately 500 word matches for the 90 original gambling words.

The words were then categorised by 10 independent reviewers, which included a combination of gamblers and non-gamblers recruited by opportunity sampling based on whether they regularly gambled (once a week or more) or did not gamble. The reviewers were asked to consider each word in turn and place it under a category of gambling, neutral or negative, if they considered any particular word to clearly fall into one of those categories. If a word could not be regarded as falling clearly into one of the three categories, it was to be excluded. This eliminated any words that matched the original 90 gambling words, but were not regarded as either neutral or negative. The reviewers were also asked to add any words they felt were common gambling words, but were not on the original list.

Again, following the recommendations of Cox et al (that between 15 and 30 words per category were optimal to increase effect size), further processes were adopted to reduce the overall number of words to be used during the task. Firstly, the gambling words were presented to members of staff and customers in a variety of gambling establishments in the North East of England, including bookmakers, arcades and casinos. There are over one hundred bookmakers in Newcastle upon Tyne, and staff and customers from ten of the most central locations were approached to review the word lists. There are three main casinos, and staff from two of which were happy to help with word selection. Three of the city centre amusement arcades were also approached and staff from one arcade helped with word selection. They were asked to identify the words that they thought were most strongly related to gambling, and eliminate words that they did not recognise or felt were only weakly related to gambling. This process eliminated several words from the original list leaving less than 40 gambling words.

The original 10 gambling and non-gambling reviewers were then asked to rate the neutral and negative word matches for these forty words, and select the most neutral and negative match in each case. This process enabled 40 gambling words to be selected along with their matching

negative and neutral counterparts. From this list of 40, words were selected that were the most generic gambling terms relating to the greatest number of types of gambling activity. Words were also removed if the matches selected were regarded as potentially upsetting or offensive, or ambiguous. This left 24 gambling words with their respective matches.

Again following recommendations by Cox et al to improve effect size, gambling words were then put into three blocks with 8 words in each block. The gambling words were rated by the reviewers on valence to ensure that each block had, where possible, an even distribution of positive, negative and neutral gambling terms, such as *win*, *lose*, *casino*. Words were also distributed between the blocks paying attention to the word length and frequency of use so that the blocks were evenly matched. When possible, an even spread of nouns, verbs and adjectives was used in each block.

In keeping with previous research (Cox et al, 2006) the maximum number of words was kept to 24, and the most commonly rated and generic gambling words selected were chosen, with eight positive gambling terms, such as *winner*, *jackpot* and *bonus*, eight neutral gambling terms such as *casino*, *bet* and *scratch card* and 8 negative gambling terms, such as *loser*, *losing* and *lost*.

The first block had eight gambling, eight negative and eight neutral words. There was then a sequence displaying four lines of text only containing “XXXX” and then another block which presented the eight negative words first, then eight gambling words, then eight neutral words. Then another sequence of four XXXXs. Then the final block presented eight neutral words, eight negative and eight gambling words. The words were grouped across the presentation blocks as best as possible to balance for frequency and word length, by comparing frequencies and word lengths of each word and distributing words across blocks to prevent an uneven number of long, or low frequency words appearing in succession in one block. The final word selection for the Gambling Stroop Task is shown in Table 2.5.3.



Table 2.5.3 Gambling Stroop Task: Final selection of words

	<b>Gambling words</b>	<b>Neutral Words</b>	<b>Negative words</b>
<b>Block One</b>	win casino lucky jackpot loser betting gambler bookmaker	air clouds films popcorn buggy watches baskets songbirds	die doubts trial devious cried tearing blooded lecherous
<b>Block Two</b>	lost bookie winning bonus lottery bet gamble scratch card	ship joists charter novel balloon bed toggle journey home	hate dreads killing nasty hostile lie injure torture post
<b>Block Three</b>	luck lose collect bets gambling bingo winner slot machine	port boot theatre nets clusters spoon rocket tall country	kill dead offense sore spitting drown crimes mess already

The Gambling Stroop Task was then programmed on E-prime software, incorporating the 24 gambling words, 24 neutral words, 24 negative words presented randomly in the colours red, yellow, blue and green, font size 24. Computer keys were coloured with a circular sticker on four keys to guide participants' responses, with red on the 'r' key, yellow on the 'y' key, green on the 'c' key and blue on the 'b' key. In keeping with methodological recommendations regarding the addiction Stroop paradigm, participants were asked to respond both manually, by striking the computer keyboard with one finger of their writing hand, and verbally naming the colour that they

were selecting. This combined method has been found to increase interference and effect size during addiction Stroop tasks (Cox, Fadardi, Pothos, 2006).

#### **2.5.4 Gambling Stroop Task: Procedure**

Participants sat at a desk in front of a standard lap top computer running the Gambling Stroop Task. The instructions appeared on the screen, explaining that different words would appear on the screen in different colours - red, blue, yellow and green - and that the task was to identify the colour of the font whilst ignoring the meaning of the word presented. The computer keys used to identify the colours were R for Red, Y for yellow, B for Blue and C for green. Each key had a correctly coloured sticker to assist location. The instructions were to identify the correct font colour as quickly and as accurately as possible by hitting the correct key, and also saying the name of the colour aloud. Participants were asked to do this as quickly and as accurately as they could, using one finger of their writing hand to strike the appropriate key. Verbal responses were also recorded, however only the keypad responses were used for analysis purposes. Reaction times were collected from the keypad responses for each trial and the mean response time for each category was calculated for each participant. Following Boyer and Dickerson's Stroop procedure (2003), participants were told that if they made an error they should correct themselves. The words would appear on the screen for at least 1sec, irrespective of how quickly participants reacted, and remain on the screen until a correct response was made.

The participants received eight practice trials prior to the main task. The eight trials included each colour twice, presented using XXXX instead of words. This allowed the participant to familiarise themselves with the different positions of the keys as well as the font colours. The starting position for their hand before the first trial was the space bar on the keyboard. When they were ready the participant was asked to press the space bar on the keyboard and the trials began.

### **2.5.5 Roulette MouseTracker Task: Development**

There is strong evidence that motor responses to external stimuli, such as catching a ball, are continuously adjusted by cognitive processes throughout the time it takes to anticipate where the ball and hand will eventually connect (Abrams & Balota, 1991). Gathering data on temporal physical responses during decision-making tasks adds a new dimension to evaluating decision-making. Collecting data during the time it takes from being presented with a choice, until the final decision is made, will reflect not only the final selection, but also the dynamic interaction between cognitive and physical processes and the adjustments made during a decision process (Spivey, Richardson & Dale, 2008).

MouseTracker is a software package that allows measurement of computer mouse movements during psychological tasks, in order to evaluate real time decision-making processes. Measurements of mouse movements, including trajectory and reaction time, give rich data during processes that involve optional decision-making. This allows a more in depth analysis of the processes involved during the decisions to be made. MouseTracker software typically presents the user with two options at opposing corners of the top of the computer screen (Freeman & Ambady, 2010), and enables detailed exploration of bias, and consideration of alternate choices during a decision-making process, played out through physical movement during the time that the cognitive process is occurring (Freeman & Ambady, 2010; Freeman, Dale, & Farmer, 2011). It is believed that if a participant is asked to move a computer mouse during a decision-making, or preference task, the participant's unconscious bias toward one decision or preference will be mapped out by their movement of the mouse during the decision (Freeman & Ambady, 2010). See Figure 2.5.5

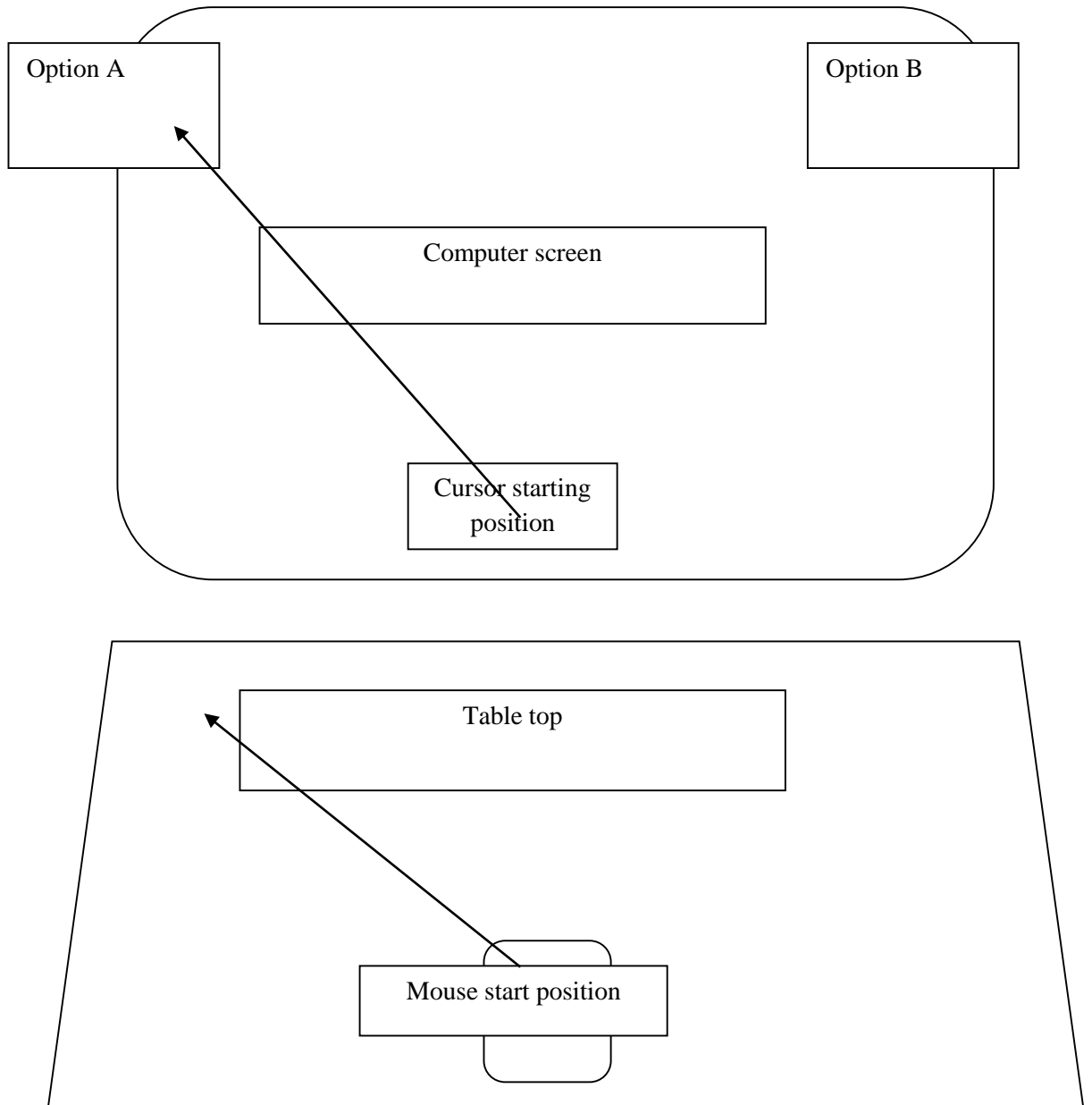


Figure 2.5.5 MouseTracker: Example of mouse movement capture

Figure 2.5.5 represents the physical computer mouse on table and hand movement and how it is emulated on screen. The mouse settings were specifically set to require a full range of physical movement which enabled capture of any minor deviation in trajectory.

Since its development MouseTracker has gone on to be used across a wide range of psychological research, including race perception bias and stereotyping (Freeman, Penner, Saperstein, Scheutz & Ambady, 2011), sex and gender stereotyping (Freeman & Ambady, 2009) trustworthiness (Martens, Hasinski, Andridge & Cunningham, 2012) memory (Papesh & Goldinger, 2012) and perceptual decision-making (Quinton, Volpi, Barca, & Pezzulo, (2013). One example of the MouseTracker in use is by Freeman, Ambady, Rule and Johnson (2008) exploring real time temporal dynamics of person perception. Participants were shown in sequence either male or female faces, with typical or atypical characteristics. For example, atypical faces were manipulated to include opposite sex cues e.g. a woman's face with short hair, or a man's face that had been morphed into more feminine features. The participants had two options in the top left and right corners of the computer screen, either 'male' or 'female'. When asked to categorise the atypical faces participants mouse trajectories displayed increased attraction to the opposite sex, before finally selecting the correct categorical response. This has been interpreted as revealing a dynamic competition between processes used to identify and categorise the images in the face of conflicting social cues.

Typically, implicit tasks such as the Stroop task, rely on the reaction time or error rate produced during a task as the main measure, which is then used to interpret the underlying processes taking place during the task, based on one or both of these two end products. With MouseTracker software collection of data is obtained throughout the participants' response from the moment of stimuli appearing, until the final selection has been made. MouseTracker data allows the collection not only of that final decision, but also of any hesitation, consideration of the alternative option, or last minute switching from the originally selected item to another whilst the decision was made.

The MouseTracker software records, among other things, the trajectory of the mouse movement from the point of origin at the bottom centre of the screen until the selection is made at either of the top corners of the computer screen. Streaming data is collected on the X and Y coordinates of the mouse movements across the computer screen at a rate of over 60 samples per

second (see Figure 2.5.5b). This is produced in an excel spreadsheet that provides a selection of data outputs.

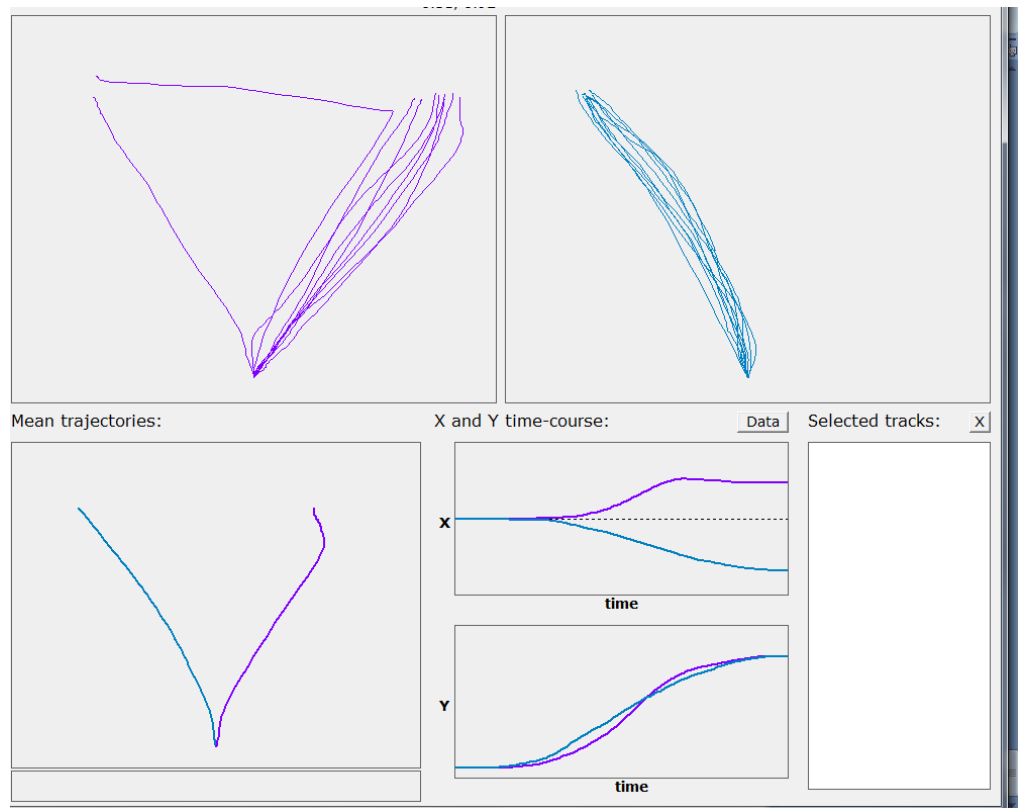


Figure 2.5.5b Roulette MouseTracker task: Screen shot of mouse trajectories mapped during experimental trials

Measurements of reaction time, maximum deviation (MD) from a straight line and Area Under the Curve (AUC) are recorded for each trial. MD and AUC are regarded as measurement of the degree of consideration toward the unselected option (Freeman & Ambady, 2011) and are shown in figure 2.5.5c.

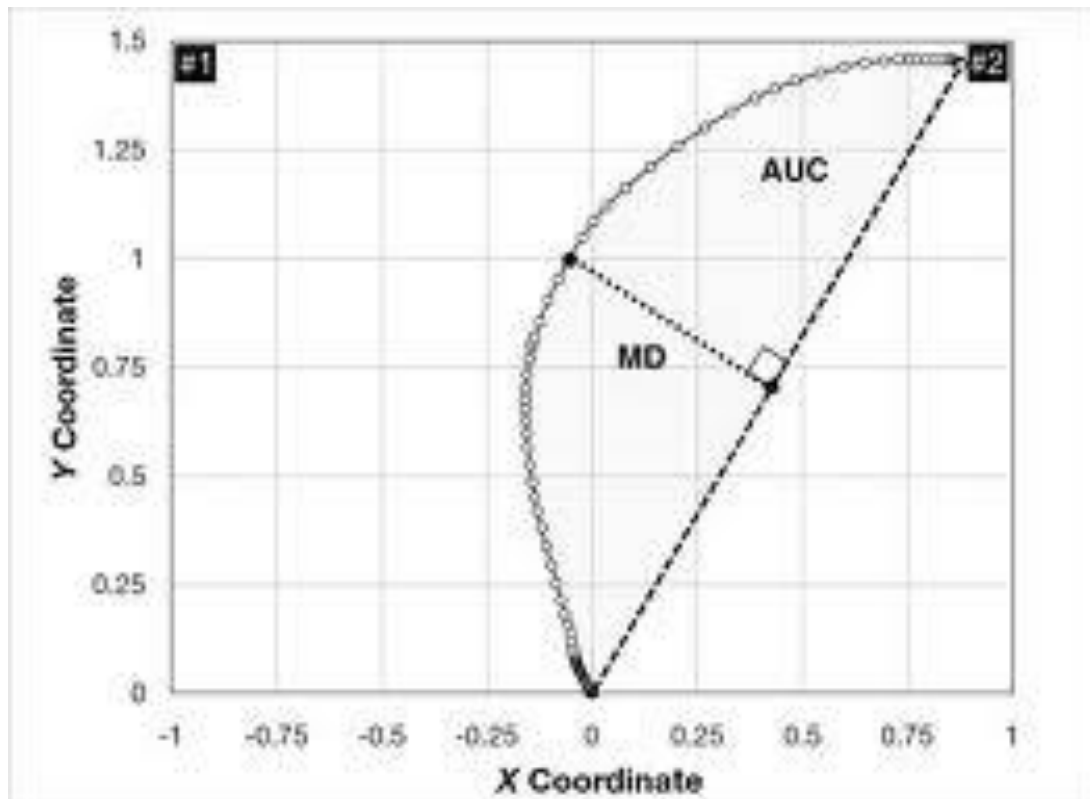


Figure 2.5.5c MouseTracker: MD and AUC measurements (Freeman & Ambady, 2009)

The trajectory can be then used as an indication of how much the participant considered the alternate option before selecting their final response. A straight line trajectory from the start point to the final selection indicates very little consideration of the alternate option, a curved trajectory which moves closer to the unselected option is interpreted as greater consideration of that choice.

This kind of dynamic processing data is not revealed when only a final RT is gathered. The MouseTracker programme then allows various different types of analysis of mouse trajectory movement during decision-making tasks. This offers a rich and detailed account not only of the final decision being made, but also of the dynamic process by which that decision is reached.

The current research uses the MouseTracker decision-making paradigm following the principle idea of the gamblers' fallacy, in which people have a tendency to expect that in a random 50/50 decision, an increased frequency of one outcome leads to a fallacious belief that alternate outcome becomes more likely to occur, even though the actual probability at each outcome remains 50/50 (Tversky & Kahneman, 1971). By utilising a binary decision-making task based on roulette, which asks participants to select the next probable outcome (red or black) based on previously observed outcomes, the Mouse Tracker programme will allow real time insight into decision-making processes that incorporate the concept of the gamblers' fallacy. It has been demonstrated, as discussed in Chapter One, that gamblers' fallacy and illusion of control (Langer, 1975) can occur when gamblers are presented with past outcomes, such as in games of roulette, and that past outcomes can influence the confidence with which the next choice is made, even though to have such confidence is erroneous (Hudgens-Haney et al., 2013). It has also been demonstrated that problem gamblers score higher on impulsivity (Lui et al., 2012) with impulsivity being defined as acting without thought, or consideration; therefore, the current Roulette MouseTracker Task, with its ability to measure consideration of alternate options and map continuous thought in action, was hypothesised to identify potential problem gamblers' responses as being more confident and less considered than the non-problem gamblers' responses.

#### **2.5.6 Roulette MouseTracker Task: Procedure**

For the current Roulette MouseTracker Task participants were asked to view a series of outcomes as a sequence of either red or black during a simulated game of roulette. At the end of the sequence the participant was asked to select one of two options, either red or black, to identify which outcome they thought was more probable to be next, see Figure 2.5.6. Participants were presented with 20 experimental and 20 random trials, with only the experimental trials being measured. The experimental trials consisted of ten trials ending in a run of three reds (Rend) and ten trials ending with a run of three blacks (Blend). Each category contained 10 trials with a range of sequences designed with a specific Probability of Alternation (POA). In a binary outcome task,



e.g. the toss of a coin or as in this case the outcome RED or BLACK, POA is the probability that the next outcome will be different to the preceding outcome. POA is calculated by knowing the number (n) of symbols present in the sequence, and the number of runs (r) in the sequence using the equation  $(r-1)/(n-1)$  (Falk & Konald, 1997). A truly random POA in a binary sequence would be .5 (representing a 50% probability of either outcome being next), but people's actual perceived subjective randomness is .6 (Sun & Wang, 2010). The sequences used for this Roulette MouseTracker Task range from 0 to 0.636. The higher values represent a sequence that was closer to being perceived as random. The sequences which are perceived as less random are expected to elicit a response more in keeping with the gamblers' fallacy and illusion of control. It is expected that participants who are susceptible to the gamblers fallacy will typically feel more confident about their choice following a sequence that appears less random. For example, the sequence:

RED, RED, RED - POA = '0'

This would be likely to elicit confidence in the response BLACK, as following the gamblers fallacy it would be believed that a BLACK was due. A sequence with a higher POA would be;

RED, RED, BLACK, RED, BLACK, RED, RED, BLACK RED, BLACK, BLACK BLACK – POA = '.636'

This would be perceived as being more random, and elicit a less confident response following the gamblers fallacy. The full list of sequences and their respective POA's are in Appendix 1.

For the Roulette MouseTracker Task the lap top had specific settings for mouse speed and graphics to optimise the MouseTracker software; Visualisation set at 1027 x 726 and mouse set at the second from slowest speed setting as these setting are recommended by Freeman and Ambady (2010) for optimal performance of the software and to ensure the best conditions for data capture. It was explained that the task was based on the gambling game of roulette, and as such, just as with roulette they would be asked to select which colour they would like to bet on. It was explained that some sequences were longer than others and the participant must be attentive to

the sequences. If they did not respond to the end of the sequence within 1 second by moving the mouse, then the programme would ask if they wanted to continue after that trial. It was also explained, however that as long as they offered some initial movement, that they would have time to think about their selection. To counterbalance for any potential bias, participants were allocated to one of two formats for the Roulette MouseTracker Task programme where the position of the red and black choice squares on the computer screen were reversed.

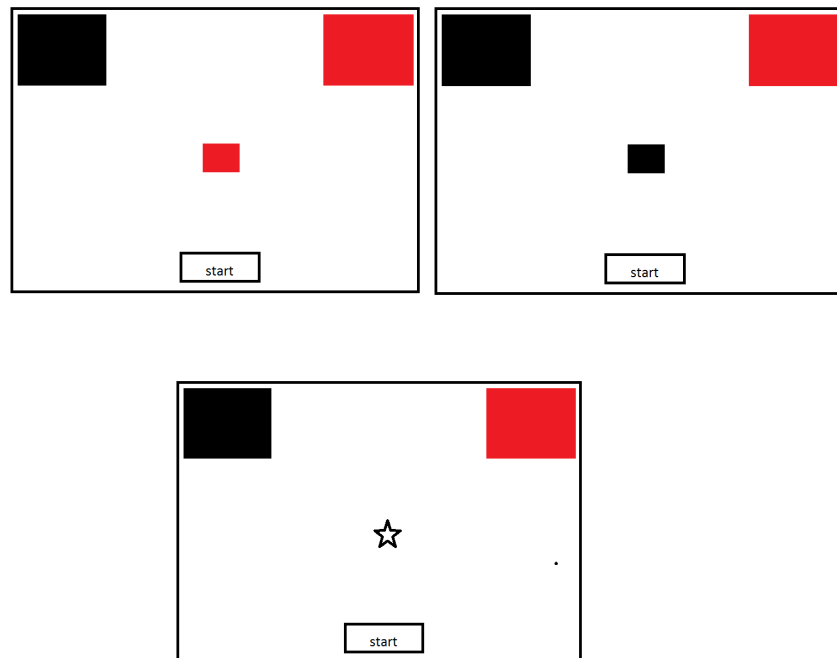


Figure 2.5.6 Roulette MouseTracker Task: Screenshots of the display showing the position of the selection squares, sequences presented in the centre of the screen followed by the star indicating the participant's opportunity to select their preference

The following written instructions were shown and read out to the participants before starting the task:

*'This task is based on the game of roulette. The actual game of roulette allows for a range of gambling choices, and as well as the equal number of black and red squares there is also a green square which alters the odds slightly, and also the numbers allocated to the coloured squares from 0 to 36. However, for this task we are only concerned with red against black and as such it is a fifty fifty choices. When you select start, a sequence will be played out in the centre of the screen, this represents the winning outcomes of the roulette wheel. Just as if you are watching the game of roulette and you can see which colours are winning. When the sequence ends, a star will appear to indicate the end of the sequence and it is then your turn to choose which colour you would like to place your money on next. You do this by moving the mouse and clicking on the colour you would like to choose.'*

Participants were seated at a table in front of the laptop ensuring that they had a full range of movement with the computer mouse on the table in front of them and the lap top at a suitable distance away to prevent contact from the participant during the trials. After being given the verbal instructions explaining the task, they were asked to select the start button at the bottom of the screen by clicking on it with the mouse. The mouse cursor is fixed at the bottom of the screen while the sequences are played out in the centre of the screen. Each colour in the sequence was displayed for 500ms with a 250 ms gap between each. When the sequence ended, a star appeared in the centre of the screen where the sequences have been displayed, indicating that it was the participant's opportunity to make a selection of either red or black by moving the mouse towards their preferred choice and clicking on it. When all trials were completed the participant was given a series of questions relating to the task as part of the larger questionnaire. The questions ask about the participant's awareness of the sequences or if they had any strategy when making their choice. It also asks for a prediction of how many trials they think they correctly selected the colour outcome, even though this was never actually measured. A rational probability outcome would be 50% for this question, and indeed in the participant instructions given before the task the outcome is explained at 50/50. This question sheet is shown in Figure 2.5.6b.

Participant number - \_\_\_\_\_ Date - \_\_\_\_\_

Were you aware of using the sequences in order to decide whether to go for red or black?

Yes/No

Did you use a strategy for deciding whether to go for red or black?

Yes/No

What percentage of trials do you think you correctly predicted the correct outcome? \_\_\_\_\_%

Figure 2.5.6b Roulette MouseTracker Task: Questions

## **2.6 Ethical issues**

There is an ethical issue raised in terms of each participant receiving money in exchange for their time taken to take part. For problem gamblers, this may be seen as incentive to engage in gambling activities, or enabling gambling involvement that would otherwise be inaccessible due to lack of money. Indeed, responses on some gambling forums were quite positively in favour of taking part, until it was explained that whilst they would receive £6 per hour, that hour would only take place once every three-months.

Again, as recruitment was not on the basis of participants actually being problem gamblers at the time of testing, only regular gamblers, it could not be assumed that any one person was a problem gambler or vulnerable to ethical issues regarding taking money in exchange for discussing their gambling behaviour. Participant information was provided to each participant detailing the nature of the testing, what was involved during the session and the aims of the research. Participants were informed that they could withdraw at any time. Access to gambling support groups was highlighted at the end of each session. Another issue with sensitive information during discussion of gambling behaviours is anonymity. Participants were known only by their participant number throughout the research, and any personal identifying information was removed from interview transcripts. Contact information was kept stored separately from data. The research was given ethical authorisation by Northumbria University Health and Life Science faculty ethics committee.

## **2.7 Procedure**

All testing took place in Northumbria University psychology department. This was to maintain anonymity of the participants, as well as to control the environment in which testing was taking place. Consistency across the sessions was maintained by providing the same environment for testing in each session. It is acknowledged that being interviewed or tested in an unfamiliar environment may have bearing on the participants' disclosure during interview, however as cognitive biases are one of the key elements of enquiry, it was important to be able to control for extraneous stimuli (such as may be found in someone's home, or in a gambling establishment) which may have bearing on such biases.

Prior to attending, participants were given basic information regarding the different tasks involved and some information regarding the nature of the research in accordance with Northumbria University Ethics Committee guidelines. Each participant followed the same procedure, with the order of tasks, questionnaires and interviews remaining the same across participants and on each subsequent visit. The researcher explained to the participants that they would undertake two different computer tasks, be asked to complete a questionnaire regarding their gambling behaviours and be recorded during an interview about their gambling behaviours. The whole process would take approximately one hour and the participants could stop or ask questions at any time. During the computer tasks the participant was seated at a desk in accordance with the method for each task detailed previously in this chapter. During the questionnaire and interviews stages the participants were able to move to more comfortable seating if preferred. While the participant completed the tasks and questionnaires the researcher left the room.

The order of the tasks was selected to optimise the involvement of the participants and also to maintain consistency between participants and across sessions:

- The Roulette MouseTracker Task was given first. This was due to the decision-making and risk element of the tasks, and the desire to obtain responses in an unbiased way. Therefore, the task was given prior to any questionnaires or discussion regarding skills, probabilities, chance or strategies that may then influence the participant to respond in anyway differently to their normal behaviour.
- The questionnaire measures were then given, allowing the participant to consider their recent gambling behaviour without the researcher present. One of the elements under consideration for the current research is the application of standardised self-report questionnaires in identifying problem gamblers. By allowing the participants to complete the questionnaire before the interview, this also enabled the participant to raise any issues with the limitations or restrictions present in standardised self-report measures, or any aspects that they felt were missed by such measures during the interview.
- The Gambling Stroop Task used in this case is believed to tap into unconscious attentional biases toward gambling related word stimuli. As there was no control for the participants' exposure to such stimuli immediately prior to the session, having all participants answer questionnaires and then discuss their gambling behaviour for the immediate time preceding the Gambling Stroop Task was a viable way to ensure equal exposure to the consideration of gambling related stimuli prior to the Gambling Stroop Task. This may have had an effect on responses during the task, however the effect should have been experienced across participants.

A summary of the session procedure and task sequence is shown in Table 2.7

Table 2.7 Procedure; Sequence of tasks, questionnaires and interview

**Procedure; Sequence of tasks, questionnaires and interview**

**1. Roulette MouseTracker Task**

The participant was seated at a desk with a laptop computer and the MouseTracker task was explained in accordance with the method previously detailed in this chapter. The experimenter left the room while the MouseTracker task was completed. The task took approximately 10 minutes to complete. The participant was asked to notify the researcher once the task was completed.

**2. Questionnaire**

After completing the MouseTracker task, participants then completed a paper copy of the full questionnaire sheet, which contained questions about the MouseTracker task, questions about gambling participation and self-report questionnaires on problem gambling, fallacious beliefs and dissociation detailed previously in this chapter. The experimenter explained the different parts of the questionnaire, and answered any questions the participant had prior to completion. The experimenter left the room while the questionnaire was completed and the participant was asked to notify the researcher once done.

**3. Interview**

After completing the questionnaire, the interview was conducted. Following a semi structured interview schedule covering key questions regarding the participants' engagement in gambling detailed previously in this chapter, Figure 2.2.6 The interviews lasted approximately fifteen - thirty minutes, and were recorded using Audacity voice recording software on the lap top computer.

**4. Gambling Stroop Task**

Participants finally completed the Gambling Stroop task sitting at the desk in front of the laptop computer. The task was explained with both verbal and onscreen instructions. The participant was given 8 practice trials to familiarise themselves with the keypad before undertaking the task which is detailed earlier in this chapter.

**5. End of session**

The researcher thanked the participants, reminded them of the ethical guidelines regarding right to withdraw, highlighted support agencies and agreed a future date for the next session. Payment was made and signed for by the participant.

Following this procedure, quantitative analysis of all measures was undertaken. This is described initially for the first session data collected from all participants in the next chapter, Chapter Three. Analysis for the longitudinal aspect of the quantitative measures is described in Chapter Four.





# Chapter Three: Session One Quantitative Analyses

## 3.1 Introduction

This chapter reports the results of the first session attended by all participants following the procedure set out in Chapter Two. To recap, the aim of this initial session was to employ the measures selected and to establish whether relationships exist between the different methods of measuring behaviour amongst gamblers.

Self-reports of gambling behaviour are often the most typical way of collecting data from gamblers, although as mentioned problem gambling itself is categorised by a feature of gamblers potentially hiding or misleading others about their gambling behaviour (DSM-5, 2013). However, Orford does state that he finds overall that self-reported behaviour is given with a genuine attempt

at honest self-disclosure (2001), but nevertheless gamblers may be subject to confabulation beyond their conscious awareness (Evans & Coventry, 2006).

Here a series of questions relating to gambling engagement are included alongside questions on problem gambling, as detailed in Chapter Two. The expectation is that if participants are giving accurate responses to the questions regarding problem gambling, it is probable that increases in other self-report measures of gambling engagement will also be seen.

Two other key sets of self-report questions are also included. These relate to two key aspects of problem gambling identified in the literature in Chapter One; Fallacious beliefs, which capture attitudes relating to the illusion of control (Langer, 1975) and gambler's fallacy (Tversky & Kahneman, 1971); and dissociation, which has strong links to problem gambling (Gupta & Derevensky, 1998). Taking into account that self-reports may give accurate attempts at self-disclosure, but accepting that there is scope for this not always to be the case, other methods have also been adopted which are less open to distortion through conscious or non-conscious confabulation.

Following a dual-processing view of unconscious, implicit System One processes often have a strong influence on behaviour, and particularly addictive behaviour (Borland, 2013; Wiers & Stacy, 2006, Coventry & Evans, 2003). Therefore, two tasks that tap into System One processes have been developed. This is to offer an approach in gathering responses from gamblers that do not rely purely on the accuracy or honesty of self-report data. These two tasks are the Gambling Stroop Task and the Roulette MouseTracker task.

The Stroop task has been established as a measure of attentional bias and explained by Cox et al (2006) as relating to the theory of current concerns. Using three categories of words (neutral, negative, gambling) the Gambling Stroop Programme records reaction times taken to correctly identify the font colour of the words presented. Therefore, a higher score represents a slower reaction time and poorer performance. The points of interest are not only the overall scores for each word category, but taking the Neutral word category as a baseline, it would be expected that participants would be slower in responding to salient terms. Therefore, it would be expected

to see a slower response when faced with negative terms as the disruption of attention caused by strong emotional words will affect attention on the task and delay reaction times (Hinson et al, 2006). It would also be expected that if the gambling words are sufficiently distracting to regular gamblers, that performance on those words would also be affected (Boyer & Dickerson, 2002). It was anticipated that all participants would be affected by slower reaction times on negative words compared to neutral words across the sample; and that gambling words would have a greater effect on those participants with greater levels of engagement or attentional bias towards gambling, regarded as a demonstration of potential problem gambling. The measure of particular interest is the *difference* in RT scores from neutral items to gambling items. It would be expected to see larger differences in neutral to gambling RTs amongst participants with a preoccupation in gambling activities.

The second task is the Roulette MouseTracker task, which captures real time data during a roulette- based decision-making task which is then run through the MouseTracker software (Freeman & Ambady, 2010). This task is intended to identify relationships in decision-making behaviour and problem gambling, by utilising aspects of the gamblers fallacy. It is anticipated that there may be a behavioural difference that is measurable during decision-making that gives greater insight to underlying System One processes that are not captured by measuring reaction times alone. The Roulette MouseTracker task is described in detail in Chapter two. To summarise, the Roulette MouseTracker programme presents the participants with a sequence of red and black squares on a computer screen representing past outcomes on a roulette wheel. When the sequence ends the participants chooses which colour they think would win next by selecting either a RED or BLACK square at the top right or top left of the computer screen by moving the mouse from the bottom centre of the screen. The programme maps the trajectory the mouse takes during the selection as well as the choice of colour. Trials are made up of two types of trial: experimental trials and random trials. The experimental trials are made up of sequences with a manipulated probability of alternation (POA) and all ending with a run of three trials of the same colour. The random sequence trials are made up of random sequences with no manipulation of colours at the end of the sequence. Choices made by the participant are separated as either *switch* or *stick*. When

a sequence ends with a run of BLACK- BLACK –BLACK, and the participant chooses BLACK, this is regarded as a *stick*. If the participant chooses RED after a sequence ending in three BLACK it is regarded as a *switch*. Following the gamblers fallacy (Tversky & Kahneman, 1977) is it anticipated that a normative response would be to *switch* to the opposite colour after a sequence ending in three of the same colour, e.g. *switch* to BLACK after a run of RED-RED-RED.

The third approach is to collect data through an interview that allows the participant the opportunity to talk in a natural and open way about their gambling behaviour. There is evidence that during the delivery of self-narratives and discourse regarding certain problem or addictive behaviours, that changes can be identified in subjects who move into or out of problem addictive behaviours that would not be identified from only examining explicit quantifiable self-report questionnaires (Moreira, Beutler, & Goncalves, 2008). For example, two different gamblers may respond with the same figures for time and money spent on gambling, but their self-narrative may incorporate differences in structure and content that suggest opposing attitudes towards their own behaviour, not identified by the self-report questionnaires. During these first sessions, the interview data has been analysed using the LIWC2007 (Pennebaker et al, 2001) described in Chapter Two. There are four broad categories that are measured by the LIWC2007 - linguistic process, spoken word, psychological processes and personal concerns – and the focus of the analysis comes from the category of psychological processes. It is anticipated that if there is any relationship between problem gambling and any aspects of self-narrated gambling behaviour, that the LIWC2007 would capture this in analysing the interview content of 60 regular gamblers.

Therefore, following previous research that has demonstrated value in each of these methods, but also with questions raised over how complete a picture any one method can give, the aim here is to compare the various methods to examine relationships between them. As self-reports essentially rely on System Two processes and implicit tasks are designed to measure System One processes it is not known whether amongst gamblers using measures tapping into the two systems will give corresponding or opposing findings.

## **3.2 Method**

The complete method is detailed in Chapter Two. A summary of the method applied to the first session data is given here.

### **3.2.1 Design**

For the first session data a correlational design was employed with the intention of examining relationships between the various measures and potential predictors of problem gambling (PGSI).

### **3.2.2 Participants**

60 regular gamblers took part in the first session as detailed in Chapter Two. Participant demographics are detailed in section 3.3.1.

### **3.2.3 Materials**

Participants completed demographic questionnaires, based on the demographic questionnaires produced for the 2010 British Gambling Prevalence Survey (Wardle et al., 2010), see Figure 2.4, Chapter Two. The 60 participants also completed questionnaires on gambling type and frequency, time and money spent during the past year, three-months and week (Figure 2.4.1, Chapter Two).

As mentioned the PGSI was selected as the main measure of self-reported problem gambling (figure 2.4.2b, Chapter Two). Two additional self-report measures of dissociation (Figure 2.4.3, Chapter Two) and fallacious beliefs (Figure 2.4.3b, Chapter Two) were also administered. Semi-structured interviews were conducted following the guidelines for interviews set out in Chapter Two (Figure 2.4.4). The interviews were recorded using Audacity voice recording software on a laptop computer (<http://audacityfreedownload.org/>) and then transcribed by the researcher (Transcriptions in Appendix 2). The two implicit tasks were the Gambling Stroop Task and Roulette MouseTracker Task as described in Chapter Two (section 2.5).

### **3.2.4 Procedure**

The session was conducted in the following order:

- Introductions and completion of ethical documentation
- Roulette MouseTracker Task
- Roulette MouseTracker Task Questions
- Demographic Questionnaire
- PGSI
- Dissociation Questionnaire
- Fallacious Beliefs Questionnaire
- Interview
- Gambling Stroop Task
- Session ends

A full description of the procedure is given in Chapter Two (Figure 2.7).

### 3.3 Results: Self-reports

Results are first presented in turn from the participants' demographics, gambling activities self-report questionnaires and LIWC2007 analysis of interviews.

#### 3.3.1 Participant demographics

Following the recruitment process described in Chapter Two (section 2.2) a total of 60 participants were recruited. Table 3.3.1 shows the mean age, number of males and females and the mean number of years in formal education. Standard deviations (S.D.) are presented in brackets in all tables.

Table 3.3.1 Participant mean (standard deviation) age and years in education, separated by gender

Gender	Age	Years in Education
Male (n=44)	29.7 (14.74)	15.0 (3.7)
Female (n=16)	28.0 (10.38)	14.4 (2.6)

Additional demographic information that was collected included relationship status, shown in Table 3.3.1b, which shows the majority of participants were single.



Table 3.3.1b Participant relationship status

<b>N=60</b>	<b>Married or living as married</b>	<b>Single</b>	<b>Other</b>	<b>Separated or divorced</b>
<b>Relationship status</b>	8	42	5	5

Just over half of the participants were in full time education, with the next largest category being in paid work (Table 3.3.1c).

Table 3.3.1c Participant employment status

<b>N=60</b>	<b>Paid work</b>	<b>Unemployed</b>	<b>Long term disability</b>	<b>Retired</b>	<b>Looking after family</b>	<b>Full time education</b>	<b>Other</b>
<b>Employment status</b>	16	5	1	4	0	34	0

The majority of participants regarded themselves as white –white British (Table 3.3.1d)

Table 3.3.1d Participant ethnicity

<b>N=60</b>	<b>White-White British</b>	<b>Asian – Asian British</b>	<b>Black – Black British</b>	<b>Other</b>
<b>Ethnicity</b>	56	3	0	1

### **3.3.2 Participant gambling activities**

The questionnaire asked participants to indicate which activities they had taken part in from a list of gambling activities taken from the BGPS (Wardle et al., 2010), which included all common gambling activities in the UK. Table 3.3.2 shows the prevalence from the sample across the range of activities engaged in during the past twelve-months, past three-months and past week. The most popular past week activity was the National Lottery, with 36 participants taking part. 23 participants took part in online betting, casino betting or private betting in the past week (Table 3.3.2).

Table 3.3.2 Participants' (N=60) gambling engagement past twelve-months, three-months and past week

<b>Gambling activity</b>	<b>Past Twelve-months</b>	<b>Past Three-months</b>	<b>Past Week</b>
<b>National Lottery</b>	48	44	38
<b>Another Lottery</b>	30	25	18
<b>Scratch cards</b>	36	32	19
<b>Football Pools</b>	22	23	19
<b>Bingo</b>	20	20	13
<b>Slot Machines</b>	38	35	22
<b>Horse Races</b>	42	35	24
<b>Dog Races</b>	20	17	12
<b>Betting with a bookmaker (not online)</b>	40	35	27
<b>Fixed Odds Betting Terminals</b>	10	7	5
<b>Online Betting with a bookmaker</b>	30	24	23
<b>Online Gambling</b>	35	32	19
<b>Table top games in a casino</b>	40	36	23
<b>Betting exchange</b>	7	6	5
<b>Spread Betting</b>	5	6	2
<b>Private betting with friends or colleagues</b>	37	32	23
<b>Another gambling activity</b>	8	8	5

Based on their responses, each participant was given a score by totalling the number of different gambling activities engaged in during the past 12 months, past 3 months and past week. They also were asked to estimate how much money they spent during the past week and how much time they spent engaging in gambling activities during the past week. Higher scores reflect greater engagement, time or expenditure in gambling behaviour. Mean scores and standard deviations for these self-report gambling involvement measures can be seen in Table 3.3.2b.

Table 3.3.2b Self-report: Mean (standard deviation) figures for first session gambling engagement

<b>N=60</b>	<b>Past year activities</b>	<b>Past three-month activities</b>	<b>Past week activities</b>	<b>Week time (hrs)</b>	<b>Week spend (£)</b>
<b>Mean Score</b>	7.76 (2.79)	6.94 (2.94)	3.82 (2.26)	5.48 (7.36)	51.11 (95.93)

### 3.3.3 Self-report questionnaires

Participants also completed the questionnaires on problem gambling (PGSI), fallacious beliefs and dissociation described in Chapter Two (section 2.4). Scores for fallacious beliefs, dissociation and PGSI can be seen in Table 3.3.2c

Table 3.3.3 Self-report: Mean (standard deviation) scores for PGSI, fallacious beliefs and dissociation

<b>N=60</b>	<b>PGSI</b>	<b>Fallacious Beliefs</b>	<b>Dissociation</b>
<b>Behaviour Scores</b>	4.15 (3.63)	16.82 (4.57)	12.87 (3.65)

The PGSI, as well as allocating a score along a continuum, places gamblers into one of four categories based on their score, see Figure 3.3.3.

<b>TOTAL SCORE</b>
Total score. The higher the score, the greater the risk that there is a gambling problem.
Score of 0 = Non-problem gambling.
Score of 1 or 2 = Low level of problems with few or no identified negative consequences.
Score of 3 to 7 = Moderate level of problems leading to some negative consequences.
Score of 8 or more = Problem gambling with negative consequences and a possible loss of control.

Figure 3.3.3 PGSI scoring

The mean PGSI score across all 60 participants was 4.15 (Table 3.3.3), which is categorised as moderate level of problems leading to some negative consequences. The frequency of participant scores across the four categories is shown in Table 3.3.3b.

Table 3.3.3b PGSI: Frequency of participant scores across categories

<b>PGSI Category</b>	<b>non problem gambling</b>	<b>low problem gambling</b>	<b>moderate problem gambling</b>	<b>problem gambling</b>
<b>N=</b>	6	18	26	10

The scores from each of the 60 participants across the self-report questionnaire measures were input into SPSS and analysed to examine relationships between the measures. Pearson's correlations between the self-report questionnaire measures are shown in Table 3.3.4c (p.115). As can be clearly seen in Table 3.3.4c, PGSI correlates with all of the other measures as might be expected, including dissociation and fallacious beliefs. Dissociation and fallacious beliefs also correlate with one another.

### 3.3.4 Interview data

In addition to the self-report questionnaire data, a second strand of quantitative analysis involved the analysis of interview data using LIWC2007 across various linguistic features and categories. The descriptive statistics for the core linguistic features can be seen in Table 3.3.4. Fifty-eight interviews were analysed using this process as two interviews failed to record properly due to sound interference on the device which meant the transcriptions could not be completed.

Table 3.3.4 LIWC2007: Means of core linguistic features in participant interviews

N =58	Word Count	Words per Sentence	6 letters or more (%)	Words analysed (%)
<b>Mean</b> <b>(S.D.)</b>	1490.80 (838.48)	23.46 (12.05)	12.78 (2.18)	91.27 (2.6)

The focus of the salient content measures was on content categorised from within the Psychological Processes category of the LIWC2007. Positive emotions, negative emotions, cognitive processes and social processes are the four key sub categories of the dictionary words that are regarded as Psychological processes in the LIWC2007. Positive emotions contain words such as *happy*, *love* etc. Negative emotions contains words such as *hurt*, *unhappy* and contains

within it further sub categories of words relating to anxiety, anger and sadness. Cognitive processes contains words that fall under various sub-categories such as insight, certainty and inhibition. Social processes contains words relating to social relationships, including *friends* and *family*. The dictionary used to categorise words is the standard dictionary from the LIWC2007 programme. The interviews content captured by these four categories accounts for 32.38% of overall interview content, as shown in Table 3.3.4b.

Table 3.3.4b LIWC2007: Means for the four key categories (% of overall content)

<b>N=58</b>	<b>Positive emotions</b>	<b>Negative emotions</b>	<b>Cognitive processes</b>	<b>Social processes</b>
<b>Mean (S.D.)</b>	4.35 (1.42)	1.11 (0.49)	20.85 (2.06)	6.07 (1.87)

The correlations between behavioural measures (PGSI, dissociation, fallacious beliefs) and gambling involvement (number of gambling activities over 12 months, 3 months, past week, time and money spent in past week) and the four key linguistic categories from LIWC2007 are shown in Table 3.3.4c.

Table 3.3.4c Pearson's correlations of PGSI, self-report measures and LIWC2007 categories (\* p<.05, \*\* p<.01)

	Dissociation	Fallacious Beliefs	12 Month	3 Month	Past Week	Time	Spend	Positive Emotion	Negative Emotion	Cognitive Processes	Social
<b>PGSI</b>	.502**	.332**	.319*	.309*	.439**	.388**	.427**	-.142	.233	-.029	-.025
<b>Dissociation</b>		.454**	.192	.286*	.292*	.153	.068	.057	.064	-.07	-.095
<b>Fallacious Beliefs</b>			.128	.251	.132	.066	-.031	.213	.029	.017	.076
<b>12 Month</b>				.892**	.682**	.021	.264*	.024	-.093	.075	-.088
<b>3 Month</b>					.702**	.084	.233	.078	-.092	.091	-.063
<b>Past Week</b>						.338**	.441**	-.224	-.089	-.129	.01
<b>Time</b>							.691**	-.181	.087	-.163	.442**
<b>Spend</b>								-.198	-.035	-.055	.097
<b>Positive Emotion</b>									.103	-.09	.116
<b>Negative Emotion</b>										-.054	-.021
<b>Cognitive Processes</b>											.071



### 3.4 Results: Implicit measures

As discussed in Chapter Two, two implicit tasks were also completed by the participants. The results for the Gambling Stroop Task are presented first.

#### 3.4.1 Gambling Stroop Task: Analyses

The Gambling Stroop Task measurements are the reaction times taken to identify the font colour of words across three word categories, neutral, negative and gambling, as detailed in Chapter Two. The mean scores and standard deviations for the three word categories for all participants is shown in Table 3.4.1, along with the mean differences between neutral, negative and gambling word responses. Difference scores were always calculated by subtracting neutral word score from negative or gambling score, and negative score from gambling score.

Table 3.4.1 Gambling Stroop Task: Mean RT for each word category and mean differences between neutral to negative and neutral to gambling categories

N=60	Neutral	Negative	Gambling	Neutral→ Negative	Neutral → Gambling	Negative→ Gambling
<b>Mean (S.D.)</b>	804.56 (273.66)	817.87 (282.54)	830.87 (284.32)	13.30 (61.09)	26.30 (74.90)	13 (16.14)

A repeated measures ANOVA revealed a significant difference in reaction times across word categories,  $F(2, 58) = 3.709, p = .03$ . Pairwise comparisons revealed that there was a significant difference between the reaction times for Neutral and Gambling words ( $p = .026$ ), but not between Neutral and Negative ( $p = .291$ ), or Negative and Gambling ( $p = .452$ ).

Table 3.4 shows a correlation matrix of all self-report measures and implicit tasks, including RT performance on the Gambling Stroop Task showing differences between RT on

word categories. The measures represented for the Stroop task are the difference in participant reaction times between neutral and gambling words (Neutral → Gambling), the difference in participant reaction times between negative and gambling words (Negative → Gambling) and the differences between Neutral and negative (Neutral → Negative). The Neutral to Gambling measure correlates with past twelve-month activity levels,  $r(60) = .255, p = .049$ ; and past week time spent gambling,  $r(60) = .325, p = .010$ .

### 3.4.2 Roulette MouseTracker Task: Analyses

In the Roulette MouseTracker Task there were a total number of 20 experimental trials and 20 random trials. Descriptive statistics of the mean number of switch and stick choices made across both experimental and random sequences are shown in Table 3.4.2.

Table 3.4.2 Roulette MouseTracker Task: Mean number of switch and stick responses for experimental and random trials (Standard Deviations)

	Switch	Stick
<b>Experimental Trials</b>	12.65 (4.87)	7.35 (4.87)
<b>Random Trials</b>	11.5 (3.24)	8.5 (3.24)
<b>Total</b>	24.15 (7.45)	15.85 (7.45)

As shown in Table 3.4.2, during both the experimental and random trials, it is more typical for participants to switch instead of stick, in keeping with expectations (Tversky & Kahneman, 1971). To test this a single sample t-test was used to compare actual switch responses across all trials, to the expected number of switches if choice was chance (20 out of 40). There was significantly greater number of switch choices than chance,  $t(60) = 4.854, p < .001$ .

To further examine if the manipulated trials led to more pronounced switch behaviour, a second t-test compared the number of switch choices during random sequence trials to the switch choices during experimentally manipulated sequence trials. There were significantly greater switch choices during the experimental sequence trials than the random sequence trials,  $t(59) = 2.473, p = .016$ . This is in keeping with expectation of the gamblers' fallacy and demonstrates that the experimental manipulation of sequences does increase the likelihood of switch behaviour.

### 3.4.3 Roulette MouseTracker: Maximum deviation

As well as simply measuring the number of switch and stick responses, the MouseTracker analysis uses the measure of maximum deviation (M.D.) to measure the extent to which the participant moves the mouse during their selection on trials. A large M.D. figure represents movement toward the unselected option prior to the final selection. A smaller M.D. figure represents a more direct path of the mouse movement during the trials to the selected item. Descriptive statistics across the Roulette MouseTracker Task M.D. variables are shown in Table 3.4.3.

Table 3.4.3 Roulette MouseTracker Task; Means of MD values for each condition; experimental and random trials; switch and stick responses and totals

	Switch	Stick	Total
<b>Experimental Trials</b>	0.0751 (0.1073)	0.164 (0.2228)	0.0932 (0.1081)
<b>Random Trials</b>	0.0872 (0.1121)	0.1284 (0.1967)	0.0989 (0.1185)
<b>Total</b>	0.0778 (0.0994)	0.1509 (0.1707)	0.0960 (0.1033)

Considering all participant responses during the Roulette MouseTracker Task and comparison of mean Maximum Deviation (MD), a 2x2 repeated measures ANOVA revealed a significant interaction in the way participants select Switch and Stick responses across

experimental and random trials  $F(2,58) = 29.69, p < .001$ . There is a significant difference when comparing overall stick trials to switch trials,  $F(1, 59) = 40.57, p < .001$ . The differences in total maximum deviation between experimental trials and random trials is not significant,  $F(2, 58) = 1.21, p = .306$ . See Figure 3.4.3.

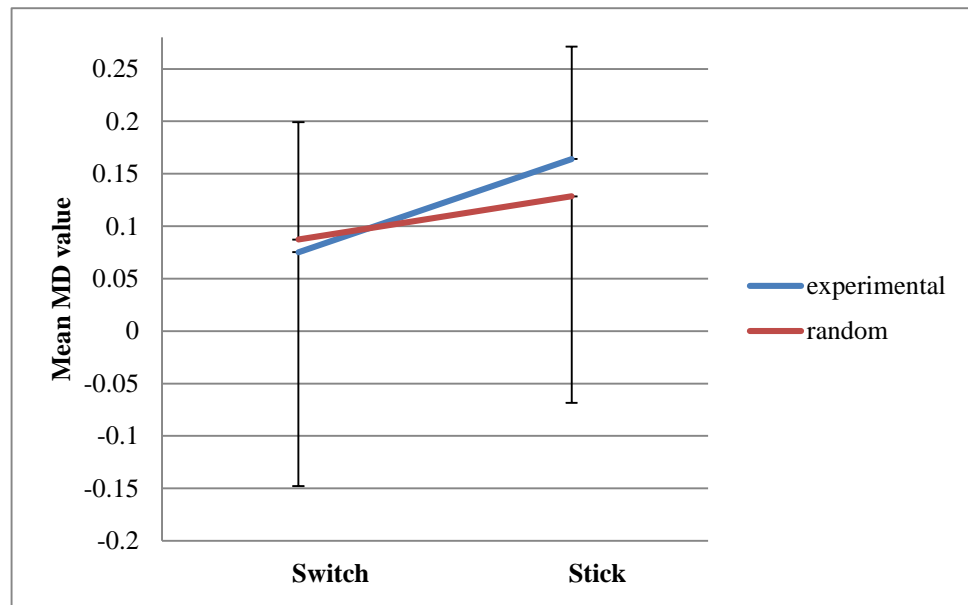


Figure 3.4.3 Roulette MouseTracker Task; Switch MD and stick MD values for experimental and random trials

#### **3.4.4 Roulette MouseTracker Task: Maximum deviation and self-report measures**

The next consideration is if there is any relationship between the Roulette MouseTracker Task responses and any of the self-report gambling data. Table 3.4 shows the correlations between the means for the Roulette MouseTracker Task trajectories during the all experimental trials (MD) and experimental trials separated into both switching (switch MD) and sticking (stick MD) trials, and the self-report measures of gambling involvement and behavioural measures (PGSI, fallacious beliefs, dissociation as well as the Gambling Stroop Task previously mentioned). PGSI has a strong negative correlation with stick MD

value,  $r(59) = -.421, p = .001$ . Stick MD also has a significant negative relationship with past week time,  $r(59) = -.322, p = .012$ ; and money spent,  $r(59) = -.302, p = .019$ .

#### **3.4.5 Roulette MouseTracker Task: Probability of alternation**

By calculating the probability of alternation (POA) for each sequence, and comparing the mean MD outcomes for each sequence by all participants a correlation was conducted to see if there was a relationship between POA and MD outcomes. The relationship was non-significant,  $r(59) = .201, p = .209$ .

Table 3.4 Pearson correlations between self-reports and implicit task (\* p<.05, \*\* p<.01)

	Self-reports			Week	Time	Spend	Dissociation	Fallacious Beliefs	Gambling Stroop Task			Roulette MouseTracker Task		
	12 Month	3 Month							Neutral to Negative	Neutral to Gambling	Negative to Gambling	MD Experimental Trials	Switch MD Experimental Trials	Stick MD Experimental Trials
<b>PGSI</b>	.319*	.309*	.439**		.388**	.427**	.502**	.332**	0.153	0.16	0.038	-0.238	-0.035	-.421**
<b>12Month</b>		.892**	.682**		0.021	.264*	0.192	0.128	0.129	.255*	0.163	0.072	0.081	0.001
<b>3Month</b>			.702**		0.084	0.233	.286*	0.251	0.033	0.124	0.105	0.056	0.032	0.022
<b>Week</b>					.338**	.441**	.292*	0.132	0.055	0.217	0.186	0.115	0.144	-0.01
<b>Time</b>						.691**	0.153	0.066	-0.076	.328*	.423**	-0.17	-0.093	-.322*
<b>Spend</b>							0.068	-0.031	0.046	0.234	0.212	-0.114	0.049	-.302*
<b>Dissociation</b>								.454**	0.165	0.112	-0.025	0.067	0.052	-0.135
<b>Fallacious Beliefs</b>									0.071	0.114	0.061	0.021	0.083	-0.096
<b>Neutral to Negative</b>										.499**	-.343**	-0.045	0.021	-0.072
<b>Neutral to Gambling</b>											.643**	-0.059	-0.088	-0.158
<b>Negative to Gambling</b>												-0.025	-0.114	-0.107
<b>MD Experimental Trials</b>													.816**	.679**
<b>Switch MD Experimental Trials</b>														.324*

### **3.5 Predictors of problem gambling**

A hierarchical multiple regression analysis was conducted with five stepwise method levels. The predicted variable was the participants' scores on the PGSI. The predictor variables were added in based on previously identified relationships in early levels, with the more novel measures added later in order to identify if they can provide any additional predictive power beyond that of the more traditional measures. It is worthy of note that when selecting the self-report predictors for inclusion in the analysis '12 month' and '3 month' were excluded to avoid problems with multicollinearity due to the strong correlations they held with each other and with 'past week' levels of gambling activity.

Data from two participants were missing from the interviews and therefore from the LIWC2007 results. For the purposes of the regression and to maintain the fullest application of data from all measures for the analyses, the missing data were replaced with mean scores from the respective categories as suggested by Roth (1994). The actual predictors included were:

Model 1; Self-Reported Activity Measures (Past Week, Time and Money)

Model 2; Dissociation and Fallacious Beliefs.

Model 3; Gambling Stroop Task RT Results.

Model 4; Roulette MouseTracker Task MD Results.

Model 5; LIWC2007 factors

A summary of the results of the analysis are shown in Table 3.5. Model 1 (representing the first level of the hierarchy) supported the value of self-report measures as predictors of problem gambling with weekly activities and weekly spend making significant contributions to the regression and explaining 26.3% of the variance in PGSI. Model 2 demonstrated that dissociation significantly improved this prediction explaining a further 16.7% of the variance. No variables were added from the next level – the measures from the Stroop task, but small significant improvements were provided by the mean deviation on the 'stick' trials on the mouse tracker task

(model 4), and the number of negative emotional utterances measured by the LIWC2007 analysis (model 5).

Table 3.5 Regression model of predictors of problem gambling (PGSI)

<b>Model</b>	<b>Contribution</b>
<b>Model 1 (step 1)</b>	$R^2=.198$ , $F(1, 58) = 14.301$ , $p < .001$
<b>Model 1 (step 2)</b>	$\Delta R^2=.065$ , $F(1, 57) = 5.025$ , $p = .029$
<b>Model 2</b>	$\Delta R^2=.167$ , $F(1, 56) = 16.403$ , $p < .001$
<b>Model 4</b>	$\Delta R^2=.084$ , $F(1, 55) = 9.553$ , $p = .003$
<b>Model 5</b>	$\Delta R^2=.041$ , $F(1, 54) = 4.989$ , $p = .030$

The overall model provided strong support for the prediction of PGSI from these variables combined  $R^2 = .514$ ,  $F(5, 54) = 13.458$ ,  $p < .001$ . The individual contributions of all predictors in the final model are presented in Table 3.5b.



Table 3.5b Beta values of all predictors in final model from session one

	<b>Beta</b>	<b>t(54)</b>	<b>Sig</b>
<b>Weekly activities</b>	.264	2.442	.018
<b>Weekly spend</b>	.206	1.904	.062
<b>Dissociation</b>	.359	3.710	<.001
<b>Mean Deviation on Stick trials</b>	-.289	-2.941	.005
<b>Negative emotional utterances</b>	.206	2.234	.030

Consideration of the beta values indicates that for all of the variables ‘weekly activities’, ‘weekly spend’, dissociation’ and ‘negative emotional utterances’ increases in these variables is associated with an increase in PGSI. However, for the ‘mean deviation’ variable the negative beta value indicates that those participants with higher PGSI scores show less deviation when selecting to stick. This might be taken as an indication of unfounded confidence in decision-making with increasing loss of control.

### **3.6 Summary**

The following section summarises the results across all measures. First to be presented are the self-report measures, then the implicit tasks.

#### **3.6.1 Self-report summary**

The self-report questionnaires relating to demographics and gambling engagement reveal certain aspects of interest from the current sample. It was anticipated that a large number of participants would be recruited from the younger student population, and this is in keeping with one of the key aims, which is to observe change in gambling behaviour. Younger gamblers have been found to demonstrate more change in their behaviours than older more stable gamblers (Wardle et al., 2011). As shown in Table 3.2.1 the majority of participants were single, and this is of particular relevance for the current research as single gamblers have been found to be more susceptible to problem gambling than married gamblers (Wardle et al., 2011).

Participants were recruited from a North East city in which the population, according to local city council statistics, comprises of 88% white-white British (Newcastle City Council, 2014 <http://www.newcastle.gov.uk/your-council-and-democracy/statistics-and-census-information/equality-statistics-research-and-information>). The ethnicity of the sample is therefore of a similar ratio as expected from the population in the area of recruitment (Table 3.2.3).

As might be expected, the most popular gambling activity amongst the sample was the National Lottery, which corresponds with BGPS figures (2010). During the past year all activities had some involvement across the sample, with the next most popular activities being horse racing, betting with a bookmaker and casino table top games for two thirds of the sample. Over half of the sample also engaged in private betting, online gambling, slot machines and scratch cards during the past year. Involvement across gambling activities remained high during past three-months, and during past week the most popular activities were still engaged in by approximately one third of the sample.

The BGPS (2010) also finds that gamblers who take part in seven or more gambling activities over the past year and three or more activities in the past week demonstrate the highest levels of problem gambling and the most changeable gambling behaviour. Data from the British Gambling Prevalence Survey (Wardle et al., 2011) find that the top 10% of regular gamblers spend just over seven hours a week and £48 on average, gambling. The BGPS also finds that gamblers who take part in seven or more gambling activities over the past year and three or more activities in the past week demonstrate the highest levels of problem gambling and the most changeable gambling behaviour. The present sample is therefore representative of the key characteristics of problem gamblers, with propensity to change their behaviours.

The mean self-report score for the problem gambling measure puts the average participant at moderate level of problems, according to the PGSI. The main interest amongst the correlations is between the self-report measure of problem gambling (PGSI) and measures of gambling involvement, such as number of activities, time and money spent; and also the relationship between PGSI and the measures of Dissociation and Fallacious Beliefs.

All questionnaire measures of self-reported gambling engagement, i.e. time money and number of different activities have a positive relationship with the problem gambling measure (PGSI), which is in keeping with expectations and suggests that amongst this sample self-reports were given in as open and honest a way as possible. The self-report measures of dissociation and fallacious beliefs also have a positive relationship with PGSI, again in keeping with expectations and also suggesting a transparent disclosure by the sample as a group in the self-report questionnaires.

The negative emotion element of the interview analysis by LIWC2007 makes a further significant contribution to the model. This suggests that as problem gambling increases, so do the number of utterances in interview that can be classed as negative emotions. These findings can be interpreted in the context of past research that states that problem gamblers are more likely to have emotional problems, including depression (Black & Moyer, 2014). It also corresponds

with past research that suggests that motives to gamble may include dissociation from everyday problems (Wood & Griffiths, 2007; Jacobs, 1986). However, it is accepted that this approach to quantifying qualitative material is broad brush, therefore further in depth qualitative analysis of key interview data is described in Chapters Five and Six.

### **3.6.2 Implicit measure summary**

To establish whether the Gambling Stroop Task is sensitive to problem gambling, means were calculated for the *differences* between scores on neutral, negative and gambling words across the sample. Difference scores were always calculated by subtracting neutral word RTs from negative or gambling word RTs, and negative RTs from gambling RTs. This was done because of the variability in reaction times from one individual to another. Whilst one person may be quicker overall in their reaction times during the Gambling Stroop Task, the difference between their reactions to neutral words and gambling words may be much larger than someone else. For example, participant A may have a mean reaction time of .98 seconds for gambling words, compared to participant B who is much slower at 1.8 seconds. However, if participant A has a mean reaction time of .45 seconds for neutral words, and participant B has a mean reaction time of 1.7 seconds this demonstrates a larger interference for participant A, even though overall reaction times are quicker. For this reason, the *differences* in RTs between word categories, rather than just overall RTs were used.

There was a significant difference between reaction times for neutral words compared to gambling words. Across the whole sample group reaction times for the gambling words was slower than for neutral words, which is in keeping with expectations for an addiction Stroop task. This suggests that across a sample of regular gamblers this Gambling Stroop Task does elicit significantly slower reaction times when presented with gambling words. However, the aim of using the Gambling Stroop Task as an implicit measure was for its ability to identify levels of problem gambling in the sample. Unfortunately, here the Gambling Stroop Task falls short. There is no suggestion of a relationship between the Gambling Stroop Task measures and either the

PGSI or self-reports of dissociation or fallacious beliefs. The Gambling Stroop Task has a stronger relationship with other self-reports of past week gambling engagement, but not at a significant level. So while as a group this sample of gamblers do react slower to salient gambling terms during the task, the task is not sensitive enough to predict problem levels of gambling from within the group.

Expectations from the Roulette MouseTracker Task are based on two concepts described in Chapter One: the gamblers fallacy and Dual System processing. The gamblers fallacy suggests that when faced with a decision about a random outcome, the previous outcomes will influence the decision, even though they have no actual effect. Dual processing offers the theory that when making decisions people tend to adopt the quick intuitive System One rather than the slower more conscious System Two, because System One is easier to use and less strain on resources. What is demonstrated amongst this sample is that participants are predominantly following the gamblers fallacy when making decisions as represented by the dominance of the switch decision. When making switch decisions they are generally made confidently and with little consideration of the alternative. This finding is exaggerated when the trials are experimentally manipulated to encourage switch behaviour, demonstrated by even less consideration of the alternate choice. Therefore, as expected, confident switch behaviour, although with no grounding in actual probabilities, is the normal behaviour in the task. Hudgens-Haney et al. (2013) found problem gamblers to be up to five times more confident in a gambling task than non-problem gamblers, and this appears to be supported here.

With regard to problem gamblers the interest lies in what happens during sticking behaviour. Sticking behaviour, as just mentioned, goes against the normal decision in the task. At the lower end of the problem gambling scale, participants lack the same confidence when making stick decisions. This is represented by a large movement of the mouse toward a switch choice, prior to finally deciding to stick. This is being interpreted as consideration of the switch choice (the normal decision) before eventually deciding to stick. However, as problem gambling

increases this consideration starts to drop. The higher scoring problem gamblers are found to make stick decisions with equal confidence to their switch decisions.

One interpretation of this in the context of dual processing is that as problem gambling increases, participants are making all decisions (switch or stick) with the same intuitive confidence that stems from unconscious System One processes. This is opposed to those with lower problem gambling scores, for whom the more conscious System Two appears to be overriding System One during the decision process when going against expectation. This apparent lack of System Two involvement in gambling decisions could have implications in identifying underlying, implicit processes that lead to overconfidence and issues with restraint and control amongst problem gamblers. These findings have implications for the potential identification of problem gamblers using a new implicit measure, found to be more sensitive a predictor than the more established Stroop type task, which does not depend on honesty, in a group who may well be motivated to hide their problems. This demonstrates a contribution from both unconscious decision-making (System One) during a gambling related task and self-reported problem gambling (System Two) in predicting problem gambling. As well as the more basic attribute of end of sequence being either three reds or three blacks on the experimental trials, there is the more complex attribute of probability of alteration (POA), which takes into account all characters in the sequence and their order, when predicting the likelihood of someone selecting the alternate response outcome. Each trial has a distinct POA calculated as described in Chapter Two. POA does not have a significant relationship with the MD value during decision-making. It therefore appears that the POA – the more specific attribute of the sequence that takes into account all parts of the sequence – does not correspond to the consideration of alternate responses by the participants. It is clear from these results that the typical response across all trials for all participants is switch behaviour, which corresponds with gamblers fallacy and may be considered the normative response. It is of particular interest that it is only lack of consideration of the alternate, measured by MD value, during the non-normative responses that appears to have a relationship with level of problem gambling behaviour.

### **3.6.3 Limitations**

It is acknowledged that one of the key aims of the research is to examine gambling behaviour with the awareness that self-report methods may be unreliable. Therefore, the use of only one key measure of problem gambling, and for that to be itself a self-report instrument, may be a concern. This is discussed further in the final chapter, where consideration of the various methods (in the subsequent chapters) used in triangulation is covered in more detail. However, there is scope to have incorporated additional methods of establishing problem levels of gambling behaviour instead of only the PGSI. In addition, relying on accurate self-reporting of elements such as time and money, as well as frequency and type of gambling activities could be questioned. More reliable ways of obtaining this kind of data could be used, such as behavioural tracking (Auer & Griffiths, 2013). Such tools record actual real time gambling behaviours when using online systems, and therefore bypass the reliance on participant recall and accuracy.

However, as the data gathered at this stage appears to give a coherent account of behaviour, should we take it as being flawed? Perhaps for this sample, reliability of self-reported behaviour is not as much in question as would be that of purely high risk, high problem gamblers. The sample here includes a broad range of largely non-problem, lower risk gamblers. If the same methods were employed with a cohort of established high problem gamblers it would remain to be seen whether the same coherence would be observed. Another potential consideration, is that the self-report data given by the individuals provides a coherent message, because the individuals want it to. Accuracy in reporting amounts of time and money, types and frequency of gambling activities as well as psychological elements such as fallacious beliefs and dissociation may be heavily influenced by the individuals own construction, and rationalisation of their behaviour post event (Evans & Coventry, 2006). Whether consciously adjusting these elements or not, the participants may be producing a coherent message, in order to make sense for themselves when being asked to recall behaviours. It may, therefore, not be an accurate portrayal of actual behaviours or attitudes.

### **3.6.4 Overall summary**

By utilising a variety of methods to examine predictors of problem gambling, it is revealed that amongst the present sample, traditional self-report measures of gambling involvement do have a relationship with self-reported problem gambling, as do measures of self-reported dissociation and fallacious beliefs. Furthermore, using the Roulette MouseTracker Task adds to the strength of the prediction, along with statistical analysis of the verbal narrative given by gamblers. So whilst in this case traditional self-report measures do appear to give a reliable account of behaviour, the additional elements of implicit measure and narrative add to the account when predicting levels of problem behaviour in gamblers. This adds support to a dual processing approach to addiction that describes two aspects of internal processes at work in addictive behaviour. The explicit self-reporting of behaviour, such as the questionnaires, relates to the slower conscious System Two processes in dual processing. Whilst there are potential concerns over the reliability of self-report measures in any context, it appears that here the responses given portray an expected and coherent pattern. However, if dual process theories are to be explored there is more to the story. The second aspect of dual process theories posit the quick, intuitive and impulsive System One, which often works against System Two, and is beyond the ability of a person to control without considerable effort (Borland, 2013). The two implicit tasks that have been introduced here are believed to tap into System One processes, with the Gambling Stroop Task measuring attentional bias and the Roulette MouseTracker Task measuring heuristics during decision-making. The self-narrative that is measured during interview contains aspects of both System One and System Two processes. Conscious self-disclosure during interview is expected, where the individual has some deliberation and control over content of what they say. However, there are other elements of verbal behaviour that are more intuitive and heuristic, occurring in natural speech without overt control or awareness by the individual. For example, it is relatively easy for an individual to control whether or not they reveal a piece of personal information, but more difficult to control the specific number of times they make reference to positive or negative emotions, or how often they include words of six letters or more during their narrative.



By combining both implicit (System One) and explicit (System Two) methods, there is a stronger prediction of problem gambling than by relying on explicit self-reports alone. This adds weight to the usefulness of the implicit methods when dealing with a group that have the potential to hide their internal beliefs about their behaviour. It also strengthens the concept that there is more than one process involved in problem gambling behaviour, and that some of the contributing elements to problem gambling behaviour may be outside of an individual's conscious awareness or control. Following a dual processing explanation of gambling addiction and behaviour, exploring the relationships between measures which tap into these conscious and unconscious processes is an important step in providing a fuller explanation of gambling behaviour. Responses during the Roulette MouseTracker Task and frequency content of verbal utterances are aspects of implicit behaviour that are outside the conscious awareness of participants, and therefore provide a contribution toward prediction that does not depend solely on the accurate reporting of behaviour by problem gamblers. The next chapter examines the same measures longitudinally to explore predictors of *change* in gambling behaviour.

# Chapter Four: Longitudinal Quantitative Analysis

## 4.1 Introduction

Following the comparison of multiple measures and different methods that were detailed in Chapter Three, another of the key driving considerations of the current research is that problem gambling lies on a continuum, with gamblers moving in and out of different levels of problem gambling (Cox, Enns, & Michaud, 2004). The value of longitudinal research into addictive behaviours has been long established, one of the key studies mentioned in Chapter One being the Robins, Heltzer and Davis (1975) investigation into Vietnam vet drug use during and after tours of Vietnam. Alongside this, differences in socio-demographic factors which may change over time such as relationship status, income and simply where someone lives, have been found to predict different levels of addiction (Brownsberger, 1997). More recently research has examined online gaming, and particularly the longitudinal trajectory of problem gaming amongst adult online gamers, in order to give a fuller understanding of the changes that occur in self-reported problems and associated problematic symptoms (King, Delfabbro & Griffiths, 2013). In the context of gambling specifically, the Orford model of Excessive Appetites places social and

environmental factors as key to holding addictive behaviours in place, and that changes in such factors can contribute to successful change out of problem gambling behaviour (Orford, 2001). The recent recommendations regarding gambling research have been to examine multiple measures of gambling, (as described in Chapter Two and demonstrated in Chapter Three), and importantly longitudinal gambling behaviour (LaPlante, Nelson, LaBrie, & Shaffer, 2009) which will be examined here. Longitudinal research into addictive behaviours is believed to add essential detail on some of the causal links that underlie findings from cross sectional research (Rehbein & Baier, 2013). Recently there has been a move to examine gambling behaviour longitudinally, with some notable studies detailed in the Chapter One (e.g. DeFabbro, King & Griffiths, 2013; Romild, Volberg and Abbott, 2014).

It is anticipated that by following a range of regular gamblers at different stages in their gambling careers longitudinally, a greater understanding of the relationship between the measures established in Chapter Three will be revealed. Whilst it has been established in Chapter Three that certain measures do predict problem gambling across a sample, do the same measures predict *change* in levels of self-reported problem gambling?

In Chapter Three a clear relationship between self-reported problem gambling and higher scores across all other self-reports of both gambling engagement and the measures of attitudes, dissociation and fallacious beliefs was found. Across the sample the higher they scored on problem gambling, it was more probable that this would correspond with a higher score on time and money spent, numbers of activities engaged in and the levels of both dissociation and fallacious beliefs. One of the first elements to be examined here is whether changes in self-reported problem gambling correspond with changes elsewhere in the self-report measures. The key self-report measures of interest from Chapter Three are the past week activities and score for dissociation. Should we expect to see increases across the same measures as people rate themselves as having more problems?

The evidence in Chapter Three would suggest that changes in PGSI will be met with changes in these two key self-report measures. From the findings of the two implicit measure tasks, only the Roulette MouseTracker Task demonstrated any potential in identifying problem gamblers amongst the sample. The Gambling Stroop Task, whilst showing that the sample did have slower reactions to the gambling words than the neutral words, was not sensitive enough to identify problem gamblers. Therefore, the Gambling Stroop Task is not expected to be capable of identifying change within the smaller sample. However, the Roulette MouseTracker Task may still be a useful predictor of change. The item of interest will be whether as PGSI either increases or decreases, is there a corresponding change to the participants' decision-making specifically during *stick* responses in the Roulette MouseTracker Task. If there is, it may be expected that during stick trials, a reduced score in problem gambling corresponds with a less confident decision and more consideration of the typical switch choice.

The LIWC2007 data when incorporated into the regression analysis in Chapter Three made a significant contribution to the prediction of problem gambling. Past research has suggested that changes in self-narrative amongst individuals who experience different levels of addictive behaviour, can be observed in interview and written content by the individual (Moriera et al, 2008; Stephenson et al, 1997). The LIWC2007 has been successfully used to predict improvements in mental and physical health amongst young adults, by measuring linguistic changes in narratives (Considien, Krivoshekova & Magei, 2012). It is reasonable to expect therefore that having demonstrated that LIWC2007 analysis adds to prediction of problem gambling in the larger sample, that it may also be sensitive to change in the individuals that make up the smaller longitudinal sample. There was only one factor established in predicting problem gambling, and that was Negative Emotions. It would be expected that if the LIWC2007 is sensitive to change, that it will find an increase in negative emotions will correspond with increased levels of problem gambling and vice versa. As elements from each method made a significant contribution to the prediction of problem gambling in Chapter Three, these elements will be the focus of interest in the longitudinal analysis in this chapter.

## **4.2 Method**

The method for each individual session has been described in detail in Chapter Two.

### **4.2.1 Design**

The individual measures employed were correlational in nature, but the longitudinal aspect introduced a repeated measures element to the design. Participants returned at approximately three-month intervals, repeating the same procedure and completing the same tasks at each visit. The repeated measures aspect of the design was achieved by selecting two sessions for each participant. For each participant who completed more than one session the data from all their sessions were examined and their highest scoring session and lowest scoring sessions were identified. Sessions were established as being either high or low scoring initially by PGSI score. If a participant gave the same PGSI on all sessions, then other factors were considered. Their self-reported scores on self-reported gambling involvement, i.e. expenditure and time, and then by self-reported fallacious beliefs and dissociation were examined to establish one session as being more involved or being related to higher levels of gambling associated measures. The same process was used to establish the same individual's lowest scoring session. This gave two sessions for each participant, low and high, not necessarily occurring in the same sequence, or with the same interval between sessions.

### **4.2.2 Participants**

After the initial testing session, the results of which are described in Chapter Three, the same participants were invited back at three-month intervals. Not all participants returned for follow up sessions, and not all participants returned for an equal number of sessions. 41 participants took part in more than one session. Participants continued to return for data collection up to seven times. However, total numbers tested fell at each successive session. Section 4.3 presents data for attendance, mean scores and standard deviations for key self-report measures from all sessions.

### **4.2.3 Materials**

The materials used were precisely the same as in Chapter Two. Questionnaire measures, two implicit tasks (Gambling Stroop Task and Roulette MouseTracker Task) and the interview schedule are detailed in Chapter Two.

### **4.2.4 Procedure**

The procedure for each individual session followed the procedure detailed in Chapter Two. In summary, participants undertook the Roulette MouseTracker Task, and completed a self-report questionnaire which included questions on gambling involvement, PGSI, dissociation and fallacious beliefs. They were then interviewed and finally completed the Gambling Stroop Task.

At the end of each interview the closing questions ask if the participant has any plans between then and the next session which was due in three-months' time, and if they agree in principle to continue with the research. After completing the Gambling Stroop Task, the participant was asked again informally if they were happy to continue and a date and time was agreed for a follow up session. Wherever possible this was diarised for as close to exactly three-months as possible. A date was set, but this was also followed up with email, telephone call, and letter or text confirmation as per the participant's preference within one week of the next session being due.

If a participant did not respond to follow up session requests, further requests would be sent at three-month intervals, but stopped after three non-responses or if the participant stated that they no longer wanted to take part in the research. Therefore, some participants would occasionally return for follow up sessions, but at six month intervals, or more, rather than the typical three-months. If this was the case, they were asked to still answer all questions on the basis of their past three-month behaviour, rather than since the last interview in an effort to maintain participant responses to within the same relative time frames. Occasionally, participants were unable to meet the three-month date for personal or work reasons, and again if the time period between sessions was much greater than three-months, they were asked to give all responses based

on the past three-months, rather than since the last interview to maintain the relative time frames.

When participants did attend a session, they followed exactly the same procedure as outlined in Chapter Two.

### 4.3 Results

Descriptive statistics and frequency data are presented first from the self-report demographic questionnaires.

#### 4.3.1 Participant demographics

From the original 60 participants 41 attended two sessions. The mean age, gender and education of the 41 captured at the time of each session are shown in Table 4.3.1. One participant did change their self-reported gender during the research.

Table 4.3.1 Self-report measures: Participant mean age, education and gender ratio for low and high session

N=41		Gender	Age	Years of full time Education
Low session	Male (n=31)		32.0 (15.63)	14.2 (2.79)
	Female (n=10)		29.0 (11.64)	14.9 (1.93)
Total Means			31.3 (14.7)	14.8(2.61)
High session	Male (n=30)		31.8 (16.2)	14.9 (3.4)
	Female (n=11)		29.9(11.33)	14.1 (2.21)
Total Means			31.0 (14.97)	14.7 (3.12)

Relationship status, shown in Table 4.3.1b, shows the majority of participants were single and slight changes occurred between sessions.



Table 4.3.1b Self-report measures: Participant relationship status in low and high sessions

<b>Relationship Status</b>	<b>Married or living as married</b>	<b>Single</b>	<b>Other</b>	<b>Separated or divorced</b>
<b>Low session</b>	7	27	2	5
<b>High session</b>	6	26	4	5

Just over half of the participants were in full time education, with the next largest category being in paid work, again with slight changes occurring between sessions (Table 4.3.1c).

Table 4.3.1c Self-report measures: Participant employment status in low and high session

<b>Employment Status</b>	<b>Paid work</b>	<b>Unemployed</b>	<b>Long term disability</b>	<b>Retired</b>	<b>Looking after family</b>	<b>Full time education</b>	<b>Other</b>
<b>Low session</b>	8	4	1	2	0	25	1
<b>High session</b>	10	4	1	1	0	24	1

The majority of participants regarded themselves as white –white British (Table 4.3.1d).

Table 4.3.1d Self-report measures: Participant ethnicity in low and high sessions

<b>Ethnicity</b>	<b>White-White British</b>	<b>Asian – Asian British</b>	<b>Black – Black British</b>	<b>Other</b>
<b>Low session/ High session (no change)</b>	7	3	0	1

#### **4.3.2 Attendance at sessions**

The number of participants attending each session during the research fell at each successive session. Table 4.3.2 shows the number of participants attending follow up sessions and the descriptive statistics for the key self-report measures of gambling engagement, PGSI, dissociation and fallacious beliefs.

Table 4.3.2 Self-report measures: Attendance and mean figures for all testing sessions

Session	N=	Past three- month activities	Past week activities	Week time (hrs)	Week spend (£)	PGSI	Fallacious Beliefs	Dissociation
1	60	6.94 (2.94)	3.82 (2.26)	5.48 (7.36)	51.11 (95.93)	4.15 (3.63)	16.82 (4.57)	12.87 (3.65)
2	41	6.07 (2.23)	3.31 (2.19)	4.76 (6.06)	31.83 (68.33)	3.93 (3.94)	16.7 (4.8)	12.53 (4.15)
3	22	5.31 (1.81)	2.5 (1.34)	5.95 (8.78)	24.29 (33.66)	3 (3.82)	17.55 (4.22)	12.09 (4.42)
4	10	5.7 (1.77)	3.3 (1.34)	9.77 (14.33)	18.80 (16.22)	3.4 (3.24)	18.8 (2.7)	13.2 (4.8)
5	8	4.86 (1.35)	3.14 (1.21)	13.52 (16.39)	21.8 (22.13)	3.29 (2.56)	19.29 (3.30)	14.86 (5.58)
6	6	4.83 (1.67)	3.33 (1.51)	13.92 (15.65)	18.8 (12.89)	2.67 (2.07)	19.17 (3.06)	14.17 (6.65)
7	3	5 (0.0)	4.33 (0.0)	21.67 (18.03)	25 (14.14)	3 (1.41)	20.33 (1.41)	11 (2.12)

### 4.3.3 Self-report questionnaires

To explore change in self-reports and implicit tasks the differences from low to high scores across all measures were examined, to identify any relationship between changes in PGSI and the other key self-report and implicit measures. The mean scores for the high and low scoring sessions across the self-report measures are shown in Table 4.3.3

Table 4.3.3 Self-report measures: Comparison of means between low and high scoring sessions

Session N=41	Past three- month activities	Past week activities	Week time (hrs)	Week spend (£)	PGSI	Fallacious Beliefs	Dissociation
<b>Low Score</b>	5.85 (2.31)	3 (2.16)	5.07 (8.04)	31.6 (70.28)	2.85 (3.43)	16.51 (4.48)	12.88 (3.92)
<b>High Score</b>	6.4 (2.45)	3.46 (2.09)	5.98 (8.57)	39 (80.64)	4.67 (4.05)	17.1 (3.87)	12.56 (4.24)

As can be seen in Table 4.3.3, the mean scores across all measures are numerically higher, apart from the dissociation measure, however a paired samples t-test revealed that only the PGSI scores are significantly different,  $t(40) = -6.212, p < .001$ . This reinforces the selection of the low and high sessions.

The differences between the other self-report measures were non-significant. However, the increase in past week gambling activities from low to high sessions was approaching significance and as this was one of the key predictors in problem gambling identified in Chapter Three, this is worthy of note.

Number of different gambling activities in the past three-month:  $t(40) = -1.660, p = .105$

Number of different gambling activities in the past week:  $t(40) = -1.853, p = .071$

Time spent gambling in the past week:  $t(40) = -1.034, p = .307$

Money spent on gambling in the past week:  $t(40) = -1.283, p = .207$

Self-reported fallacious beliefs:  $t(40) = -1.115, p = .271$

Self-reported dissociation:  $t(40) = .569, p = .572$

As mentioned in Chapter Three, the PGSI categorises participants into one of four categories depending on their scores. The frequency of participant scores across the four categories for low and high sessions is shown in Table 4.3.3b.

Table 4.3.3b Self-report measures: Frequency of participant scores across PGSI categories in low and high sessions

<b>PGSI Category</b>	<b>Non problem gambling</b>	<b>Low problem gambling</b>	<b>Moderate problem gambling</b>	<b>Problem gambling</b>
<b>Low</b>	9	19	9	4
<b>High</b>	4	10	17	10

All measures are continuous, and as one of the key aims is to explore whether changes in self-reported PGSI relate to changes elsewhere, correlations have been examined across all self-report measures. Correlations comparing the differences in self-report measures from the low scoring session to the high scoring sessions are shown in Table 4.3.3c.

Table 4.3.3c Self-report measures: Pearson correlations of change (\* p<.05, \*\* p<.01)

	3Month	Week	Time	Spend	Dissociation	Fallacious beliefs
<b>PGSI</b>	0.254	0.217	-0.1	0.089	0.224	0.051
<b>3 Month</b>		.543**	0.038	0.044	-0.035	-0.208
<b>Week</b>			0.166	0.014	0.248	-0.052
<b>Time</b>				483**	0.161	-0.138
<b>Spend</b>					0.117	-0.083
<b>Dissociation</b>						0.081
<b>Fallacious beliefs</b>						

There are no significant relationships between changes in the PGSI and other measures. Increases in spending and time spent during the past week are significantly related to each other, as expected.

#### 4.3.4 Interview data

The interview content from low and high sessions was measured by using the LIWC2007 programme. Two participants' data were not originally included in this aspect of the analysis due to issues with the quality of the recordings either in one of the low or high sessions, however in keeping with recommendations by Roth (1994) these missing data were replaced with means. The core linguistic features measured from the interviews across low and high sessions are shown in Table 4.3.4.

Table 4.3.4 LIWC2007: Means of core linguistic features for low and high scoring sessions

<b>Linguistic features</b>	<b>Word Count</b>	<b>Words per Sentence</b>	<b>6 letters or more (%)</b>	<b>Words Analysed (%)</b>
<b>Low Score</b>	1454.87 (706.23)	17.99 (10.19)	13 (1.84)	90.37 (2.87)
<b>High Score</b>	1559.26 (928.86)	21.41 (12.64)	12.91 (2.1)	91.1 (2.58)

Comparisons of low and high scoring session's core linguistic features using a paired samples t-test show no significant differences in these core features.

Word count:  $t(37) = -.778, p=.442$ .

Words per sentence:  $t(37) = -1.404, p=.169$ .

Words of six letters or more:  $t(37) = -.034, p=.973$ .

Words captured by the dictionary:  $t(37) = -1.165, p=.252$ .

As mentioned in Chapter Three, there are four categories of psychological processes that are being examined in relation to gambling addiction and behaviour change. The content of each of these key categories for both low and high scoring interviews are shown in Table 4.3.4b.

Table 4.3.4b LIWC2007: Means for the key four categories (% of overall content) during low and high scoring sessions

<b>Session N=41</b>	<b>Positive emotions</b>	<b>Negative emotions</b>	<b>Cognitive Processes</b>	<b>Social Processes</b>	<b>Total % of interview content</b>
<b>Low Score</b>	3.92 (1.19)	1.15 (.41)	20.57 (2.44)	5.36 (1.75)	30.99 (3.06)
<b>High Score</b>	4.08 (1.42)	1.14 (.48)	21.02 (2.06)	6.19 (2.07)	32.43 (3.25)

Apart from negative emotions, which is almost exactly the same in both low and high scoring sessions, Table 4.3.4b shows that there is a numerically higher percentage of each of the other categories in the high scoring sessions. When comparing the overall total interview content captured under these four categories, a paired samples t-test showed that there was a significant increase in the overall total of salient utterances during the high scoring sessions,  $t(40) = -2.952$ ,  $p = .005$ .

A paired samples t-test comparing differences between the low and high session interview content for each individual category found a significant difference in the social processes category,  $t(40) = -2.344$ ,  $p = .024$ , with an increase in social references during the high scoring sessions. The other comparisons were non-significant.

Positive emotions:  $t(40) = -.597$ ,  $p = .554$

Negative emotions:  $t(40) = .106$ ,  $p = .916$

Cognitive processes:  $t(40) = .231$ ,  $p = .231$



Correlations between the differences in self-report measures and the four key LIWC2007 categories from low to high sessions were also examined (Table 4.3.4c).

Table 4.3.4c Pearson correlations of change in self-report and interview data (\* p<.05, \*\* p<.01)

N=41	Month activities	Week activities	Time	Money	Dissociation	Fallacious Beliefs	Positive emotions	Negative emotions	Cognitive processes	Social processes
<b>PGSI</b>	0.229	0.163	-0.088	0.078	0.145	-0.145	-0.005	0.171	0.087	0.233
<b>Month activities</b>		.527**	0.048	0.041	-0.025	-0.313	.318*	-0.083	0.063	0.278
<b>Week activities</b>			0.15	-0.001	0.205	-0.175	0.208	-0.079	0.257	0.022
<b>Time</b>				.517**	0.126	-0.25	-0.156	-0.111	0.001	-.377*
<b>Money</b>					0.073	-0.129	0.07	-0.126	-0.111	-0.151
<b>Dissociation</b>						0.013	-0.166	-0.181	0.126	-0.084
<b>Fallacious Beliefs</b>							0.025	-0.053	-0.129	-0.312
<b>Positive emotions</b>								-0.105	-0.085	0.208
<b>Negative emotions</b>									0.14	0.024
<b>Cognitive processes</b>										0.017

There is a positive significant relationship between positive emotions and past three-month number of different activities. There is also a negative relationship between social process utterances and time spent gambling in the past week. However, these do not withstand Bonferroni correction for multiple comparisons.

#### 4.3.5 Implicit measures

Following the findings from Chapter Three, the Gambling Stroop Task did not significantly add to the prediction of problem gambling, whereas the Mouse Tracker measure of maximum deviation during stick trials did. For completeness in comparing changes across all measures the key Gambling Stroop Task measures (differences between neutral and gambling, and negative and gambling words), and the key Roulette MouseTracker Task measures of interest are included. The mean score for each measure across low and high sessions can be seen in Table 4.3.5.

Table 4.3.5 Implicit measures: Comparisons of means between low and high scoring sessions

<b>Session N=41</b>	<b>Stroop Neutral to Gambling (msec)</b>	<b>Stroop Negative to Gambling (msec)</b>	<b>MouseTracker Mean MD</b>	<b>MouseTracker Switch MD</b>	<b>MouseTracker Stick MD</b>
<b>Low Score</b>	11.41 (83.04)	9.91 (82.6)	0.0804 (0.1297)	0.0626 (0.1369)	0.1096 (0.2168)
<b>High Score</b>	21.72 (70.14)	6.33 (77.07)	0.0765 (0.1278)	0.0696 (0.1357)	0.1183 (0.2041)

The measure of difference from neutral to gambling RT is the key measure of interest from the Gambling Stroop Task. A paired samples t-test shows this is not statistically significant,  $t(40) = -.640, p = .526$ .

The Roulette MouseTracker Task shows no change in either the switch MD or stick MD from low to high. Examination of the individual sessions, low and then high actually show that while there are differences between switch and stick behaviour in the way that is expected, i.e. stick has a greater MD, this is not significant here. Changes in the key measurements taken from the implicit tasks have also been correlated with change in PGSI and other self-report measures. Correlations of these changes in scores are shown in Table 4.3.5b.

Table 4.3.5b Pearson correlations between change in self-report measures and key implicit measures (\* p<.05, \*\* p<.01)

	3Month	Week	Time	Spend	Dissociation	Fallacious Beliefs	Neutral to Gambling	Negative to Gambling	Mean Maximum Deviation	Switch Maximum Deviation	Stick Maximum Deviation
<b>PGSI</b>	0.254	0.217	-0.1	0.089	0.224	0.051	0.073	0.038	0.166	0.102	-0.076
<b>3Month</b>		.543**	0.038	0.044	-0.035	-0.208	-0.108	0.017	-0.008	-0.008	-0.124
<b>Week</b>			0.166	0.014	0.248	-0.052	0.182	0.112	-0.057	-0.096	-0.129
<b>Time</b>				.483**	0.161	-0.138	-.339*	-0.243	0.15	-0.113	0.074
<b>Spend</b>					0.117	-0.083	-0.151	-0.136	0.213	0.003	0.094
<b>Dissociation</b>						0.081	0.266	.311*	-0.107	-0.238	-0.006
<b>Fallacious Beliefs</b>							0.101	0.13	0.073	-0.007	0.076
<b>Neutral to Gambling</b>								.429**	-0.119	-0.061	0.019
<b>Negative to Gambling</b>									-0.235	-0.287	-0.024
<b>Mean Maximum Deviation</b>										.669**	.704**
<b>Switch Maximum Deviation</b>											0.223

There are no significant relationships between change in PGSI and any of the key implicit measures. There is a significant relationship between increased time spent gambling in the past week and reduced Neutral to Gambling RT. There is also a significant relationship in the difference between Negative to Gambling RT and Dissociation.

Having examined the change across all measures from lowest to highest scoring sessions, it appears that change in PGSI is not followed by significant change on any of the other measures. This raised the question as to whether, for this sample of 41 and looking specifically at the lowest and highest scoring sessions, the relationships found in Chapter Three still could be observed during first of all the low scoring session and then at the high scoring session. Remembering that the data analysed in Chapter Three was for all 60 participants, during the first session they took part in, so was not necessarily the same sessions that were used for analysis in Chapter Four.

First of all, measures in the low scoring sessions were analysed. The correlations for the low scoring session measures are shown in Table 4.3.5c. Secondly the relationships between measures during the high scoring sessions were analysed and are shown in Table 4.3.5d. What can be seen from the correlations at both low and high points, is that while as demonstrated earlier, there is no relationship with regard to change across measures, there are still relationships between the key measures in the sessions selected as low and high. These can be seen mostly amongst the self-reports, however in the high sessions particularly, there are also emerging relationships between the implicit tasks and the self-reported PGSI which correspond with the findings from Chapter Three.

Table 4.3.5c Pearson correlations of all measures during the low scoring session (\* p<.05, \*\* p<.01)

	3Month	Week	Time	Spend	Dissociation	Fallacious Beliefs	Positive Emotions	Negative Emotions	Cognitive Mechanisms	Social	Neutral to Gambling	Negative to Gambling	Mean MD	Switch MD	Stick MD
<b>PGSI</b>	.161	.348*	.330*	.629**	.514**	.325*	.069	.204	-.032	.104	.262	.156	.074	.018	.023
<b>3Month</b>		.632**	.051	.276	-.016	.073	.170	-.284	.179	.037	.256	.255	.095	.056	.012
<b>Week</b>			.440**	.601**	.204	.066	-.030	-.040	-.026	.166	.464**	.403**	.079	.083	.014
<b>Time</b>				.429**	.173	.163	-.027	.087	.076	.392*	.263	.304	-.109	-.231	-.051
<b>Spend</b>					.129	.069	-.158	.040	-.027	.130	.302	.204	.153	.038	.118
<b>Dissociation</b>						.415**	.174	.169	.257	-.104	.107	.081	.324*	.343*	.224
<b>Fallacious Beliefs</b>							.232	-.070	.186	-.148	.167	.096	.068	.004	.154
<b>Positive Emotions</b>								-.064	-.112	.303	.175	-.061	.090	.004	-.029
<b>Negative Emotions</b>									-.119	.171	-.018	.123	-.231	-.216	-.083
<b>Cognitive Mechanisms</b>										-.210	-.073	.024	.214	.063	.410**
<b>Social</b>											.529**	.180	-.151	-.181	-.252
<b>Neutral to Gambling</b>												.482**	-.019	-.001	-.051
<b>Negative to Gambling</b>													-.051	-.121	.031
<b>Mean MD</b>														.850**	.663**
<b>Switch MD</b>															.331*

Table 4.3.5d Pearson correlations of all measures during the high scoring session (\* p<.05, \*\* p<.01)

	3Month	Week	Time	Spend	Dissociation	Fallacious Beliefs	Positive Emotions	Negative Emotions	Cognitive Mechanisms	Social	Neutral to Gambling	Negative to Gambling	Mean MD	Switch MD	Stick MD
<b>PGSI</b>	.338*	.480**	.396*	.377*	.482**	.441**	-.184	.443**	-.199	-.097	.140	.311*	-.068	.006	-.306
<b>3Month</b>		.590**	.178	.393*	.180	.119	.399**	.048	-.214	.141	.156	.262	-.083	-.096	-.130
<b>Week</b>			.494**	.739**	.218	-.058	.085	.026	-.478**	.054	.287	.356*	-.090	-.070	-.202
<b>Time</b>				.615**	.292	.114	-.043	.044	-.156	.150	.104	.321*	-.103	-.215	-.292
<b>Spend</b>					.151	-.033	.006	-.038	-.442**	-.007	.244	.394*	-.065	.008	-.232
<b>Dissociation</b>						.271	-.125	.097	.061	-.118	.039	.180	.049	.062	-.191
<b>Fallacious Beliefs</b>							.129	.123	.187	-.151	.209	.104	.088	.110	-.008
<b>Positive Emotions</b>								.010	-.012	.193	.205	.097	-.066	-.207	.137
<b>Negative Emotions</b>									-.189	.123	-.094	.109	-.056	-.022	-.065
<b>Cognitive Mechanisms</b>										-.134	-.033	-.148	.068	-.022	.026
<b>Social</b>											-.022	-.187	-.359*	-.367*	-.123
<b>Neutral to Gambling</b>												.483**	-.193	-.169	-.180
<b>Negative to Gambling</b>													-.124	-.325*	-.026
<b>Mean MD</b>														.854**	.585**
<b>Switch MD</b>															.359*



#### **4.3.6 Predictors of change in problem gambling**

Hierarchical multiple regression followed the model presented in Chapter Three with five stepwise method models. The predicted variable was the participants' scores on the PGSI. Data from two interviews were missing from the LIWC2007 results. For the purposes of the regression and to maintain the fullest application of data from all measures for the analyses, the missing data were replaced with mean scores from the respective categories as suggested by Roth (1994). The actual predictors included were:

Model 1: Self-Reported Activity Measures (Past Week, Time and Money)

Model 2: Dissociation and Fallacious Beliefs.

Model 3: Gambling Stroop Task RT Results.

Model 4: Roulette MouseTracker Task MD Results.

Model 5: LIWC2007 factors

Following the same model that successfully predicted problem gambling using elements from the self-report, interview and implicit tasks in Chapter Three, none of the previous variables made any contribution to *change* in problem gambling,

## **4.4 Summary of findings from longitudinal analyses**

Demographic data captured in the self-report questionnaires show some changes in relationship status and employment across the sample, demonstrating that for some individuals' life changes and personal circumstances did change in conjunction with changes in their self-reported problem gambling. The main element that is being examined in this chapter, is how the changes in PGSI measure of problem gambling relates to changes in the other measures as participants moved from low to high stages of problem gambling or vice versa.

### **4.4.1 Self-report summary**

Two sessions were identified for each participant, one low problem gambling and one high problem gambling. A comparison of the sessions identified found that the high problem session was significantly higher than the low session across the sample, confirming that we are looking at a significant change in self-reported PGSI between sessions.

Chapter Three found significant relationships between all self-report measures, with a positive increase in PGSI correlating with positive increases in all other measures of gambling engagement, fallacious beliefs and dissociation. It might be anticipated that increased self-reported problem gambling, as measured by PGSI would correlate with increases elsewhere on other self-report measures. However, none of the changes in other self-report measures demonstrate a significant relationship with changes in PGSI. Increases in past three-month and past week activities significantly correlate, as they are directly related this is not unexpected. Increased time spent gambling in the past week positively correlates with money spent in the same time, again not unexpectedly.

The core structural elements of the interview data, such as overall interview length and words analysed by the programme show no significant differences in low or high sessions. This means that in general levels of structure and content captured by the LIWC2007 programme are comparable across sessions. Four categories of salient categories were

examined in Chapter Three: positive and negative emotions, cognitive and social processes. Negative emotions was the element of interest in Chapter Three.

When comparing these four categories of salient utterances in the low and high score sessions, there was a significant increase in overall content in the high sessions. Positive emotions, cognitive and social processes all show light numerical increases. When examined individually this difference only lies in the social category. Interestingly the negative emotions remain the most stable out of the four categories. There are relationships amongst other self-report measures and LIWC2007 categories. There is a positive significant relationship between positive emotions and past three-month number of different activities. There is also a negative relationship between social process utterances and time spent gambling in the past week.

#### **4.4.2 Implicit measure summary**

The Gambling Stroop Task in Chapter Three did not add anything to the prediction of problem gambling. In the Gambling Stroop Task there are no key correlations of interest between PGSI and Gambling Stroop Task responses that correspond with theoretical explanations. However, there is a significant positive correlation between change in reaction times in the difference between negative and gambling words, and increased reporting of dissociation. There is also a significant negative correlation between change in time spent gambling during the past week and the difference in reaction times between neutral and gambling words in the Gambling Stroop Task, i.e. a reduction in time spent gambling during the last week correlates with an increased Stroop effect.

From Chapter Three the stick MD value from the Roulette MouseTracker Task was found to predict problem gambling. It might be expected that changes in this measure would correspond with changes in self-reported PGSI. However, again, there is no relationship between these measures. Across the sample the stick MD is higher than the switch MD value in both sessions, although not statistically so. But this would be in keeping with the idea that

in intuitive switch decisions there is less consideration (lower MD) of the alternative, than in less intuitive stick decision (higher MD). The difference in these two measures is extremely stable from low to high sessions. What might be expected though is that for those who show the greatest increase in PGSI, that there would be corresponding reduction in the stick MD, or vice versa, i.e. those who state they have reduced their PGSI would see an increased stick MD value, which would demonstrate greater consideration and less confidence in these less normative decisions. However, no changes are seen in the Roulette MouseTracker measure. Indeed, it is extremely stable, both across the sessions, low to high and when examining increases and decreases in self-reported PGSI.

#### **4.4.3 Limitations**

Issues regarding the accuracy of self-reporting remain from those discussed in Chapter Three. Reliability is always a concern, and more so for problem gamblers. However as pointed out, this sample may not sufficiently represent the highest levels of problem gamblers, and therefore the findings here may not be directly transferable to a population of purely high problem gamblers. Issues in self-report accuracy have been discussed in Chapters One and Three, and their importance as well as flaws will also be discussed further in Chapter Seven.

The methods being used are potentially very broad strokes, with very sensitive degrees of identification. But not perhaps specific enough to help determine factors of change within gamblers. The Gambling Stroop Task in particular, was designed initially to be a generic gambling tool. It may well tap into some level of generic gambling behaviours, but not into the specifics of problem gambling at different levels. The analysis of interview data by LIWC2007, is perhaps too blunt a tool to enable meaningful interpretation of the minutiae of verbal dialogue. Alongside which instruments such as the PGSI have previously been used to evaluate behaviour over 12 months, rather than just three.

#### 4.4.4 Overall summary

There is a strong coherent relationship between self-report measures in Chapter Three and a lack of relationship here. Is there a difference in asking about general behaviour and then asking the same people about changes in that behaviour? It is possible that when we ask people generally about their levels of problem behaviour and engagement in that behaviour, that we get broadly accurate information and that people can give reasonably accurate self-reports on their general behaviours if they wish. Perhaps the difficulty lies on asking people to accurately report on the processes of *change*.

Davies (1998) and Heyman (2009) both take a view that part of the addict state is self-constructed. They, particularly Davies, argue that an addict identity is to some extent self-defined, and not dependent on objective, underlying biological or cognitive processes. Orford (2012) takes into consideration that when making self-reports about addictive behaviour we should expect to find that individuals struggle with accuracy and contradiction, due the nature of the complex conflicts at work. Orford suggests recognising that people will have difficulty in accurately reporting on their addiction, but this does not mean it is to be discounted. However, Orford goes on to discuss change in addictive behaviour. The process of giving up an addictive behaviour Orford suggests has two main stages. Firstly, a stage of cognitive re-evaluation, and secondly the actual change in behaviours which requires fundamental changes in the interaction of various external as well as internal factors. Perhaps this is captured here? Change in self-reports on PGSI identify the stage one of change – the re-evaluation, but the second stage – actual behaviour change, has not yet occurred. Orford acknowledges that individuals' experiences of addictive behaviours will contain conflicts and they will express various levels of changing attitudes and beliefs about their behaviour prior to actually achieving a state of change.

The Roulette MouseTracker Task which was found to add to the prediction of problem gambling in the previous chapter was found to be extremely stable when examining different

stages of self-reported PGSI. At first glance this may be disappointing, hoping that a new implicit measure may not only identify problem gamblers, but also identify change. But perhaps it is revealing more about the complexity of problem behaviours. In the context of dual processing it is suggested that two systems are at play (Borland, 2013; Wiers & Stacy, 2006; Coventry & Evans, 2003); the conscious, considered System Two, captured by measures such as self-report questionnaires (the PGSI), and the intuitive, impulsive and unconscious System One, tapped into by tasks such as the Stroop and the Mouse Tracker. As discussed in Chapter One, it is widely regarded that the control System One has over decision-making and influence in addictive behaviour is stronger, more deeply established and harder to overcome than the conscious elements of System Two. Perhaps the stability in the implicit Roulette MouseTracker measure is adding to that concept. That while gamblers may self-report change in their levels of problem behaviour, in fact when we examine the underlying unconscious processes – such as intuitive decision-making, the true nature of their behaviour is revealed, and that in fact nothing has really changed. Perhaps the Roulette MouseTracker Task reveals a more accurate measure of change than the self-report. And as we see here, all self-report measures of gambling engagement, such as time, money or number of different past week activities, show no real relationship with increases in self-reported problem behaviour. Those elements are stable, as are the findings from the Roulette MouseTracker Task. So perhaps people are not really changing anything at all apart from their self-perception or attitude towards their behaviour.

The Gambling Stroop Task tells a slightly different story. The Stroop task as identified by Cox et al (2006) is believed to tap into attentional bias, and the theory of current concerns. The Gambling Stroop Task did not reveal any relationship with PGSI and did not help predict PGSI in Chapter Three. However, when comparing low and high scoring sessions, although not significant, there is an interaction taking place that approaches significance. It demonstrates that in the high score sessions the group as a whole are more distracted by both gambling and negative emotional words. Does this fit with the notion that while there is no

actual change in gambling behaviour, there is a change in conscious self-perception of problem gambling, and the Gambling Stroop Task results are capturing this attentional bias towards concerns over behaviour and the negative connotations that accompany it? So while in Chapter Three the Gambling Stroop Task did not add to any prediction of problem gambling, it does identify a shift in *concerns* over gambling behaviour.

Capturing this change in attitude may also be due to the fact that amongst this sample out of the 41 participants whose change in PGSI was examined, 29 of those reported an increase in PGSI score during the course of the research. So 29 became *more* concerned or aware of potential problems in their behaviour. This could be due to either an actual underlying increase in actual problems, or it perhaps because they had by simply engaging in the research process become more self-evaluative over the potential problems of their behaviour, which as Orford suggests is the first stage of change. This is also in keeping with the difficulties raised in Chapter One regarding defining gambling problems and problem gambling. The constituent elements of addictive gambling behaviour such as loss of control, withdrawal and increased engagement, are not the same as having disagreements between loved ones over how much money is spent, or re-evaluating one's attitude towards relatively low levels of gambling engagement from acceptable to negative. This self-evaluation which is captured by the PGSI, may only capture an attitude shift in self-perception, not an actual shift in behaviour.

It could be that self-perception of problem gambling does not depend on engagement in gambling. As described in Chapter One, there is a difference between problem gambling and experiencing gambling problems. Individuals may experience aspects of their lives, either through self-reflection or interaction with others that lead them to change their attitude to their behaviour. So while the behaviour may not change, the attitude towards it might. Interestingly when examining changes in the narratives from low to high sessions measured by the LIWC2007, there is an overall increase in the combined salient emotional, cognitive and social utterances. This suggests that in high scoring sessions people are incorporating more emotions

and processes in their self-talk. Again, this could be indicative of a change in introspection and self-evaluation.

These disparities with self-reported changes in attitudes compared to actual self-reported change in behaviour potentially highlights an issue that for individuals, increasing or decreasing engagement in gambling activities combined with changes in time and money spent, do not in themselves help to define what constitutes problem gambling in the self-reported perceptions of problem gambling. That is, increased time and money spent on gambling do not in themselves explain a self-report of problem behaviour. Furthermore, the stability of all other measures of gambling engagement and the implicit Roulette MouseTracker Task measure suggest that actual behaviour and the underlying cognitive processes that accompany problem behaviour have not actually changed. However, taking into account that the sample which is being examined in this Chapter is almost a third smaller than that in Chapter Three, perhaps we are simply losing some of the predictive qualities of measures that are quite sensitive. Likewise, in terms of the sample, as mentioned most of the participant's report moving into higher problems rather than out of them. Does the direction of change make a difference to people's self-report? If so we would need to evaluate a sample with equal proportions of directional change. Also, because the two most extreme scoring sessions are being explored for each participant, there is not a consistent time frame between each. There is scope to examine in more detail the stability or malleability of certain participants. For instance, taking participants' most extreme low scoring session could come after quite a sequence of stable high scoring sessions, and vice versa. Even though this research made attempts to follow 60 participants longitudinally over two years, in reality taking snapshots of two sessions means that for the majority of participants, this was two sessions only three-months apart. Steps could be taken to establish a more robust and consistent sample, followed more rigorously over a longer period. A key problem with the current research was initially recruiting the target sample and then maintaining sufficient numbers for long enough to know whether we are actually seeing real change, or just in some cases simply discrepancies



in attitude towards the measured behaviour because of some other factor such as mood on the day of testing, or current frequency of wins or losses, which while captured during interview does not form part of the analysis. Factors such as mood have been found to have an effect on recall (Blaney, 1986) resulting in an increased number of negative events, as well as evidence from Schroder, Carey and Vanable, (2003) that finds accuracy in self-reporting decreases as the frequency of the behaviour in question increases. This could have an effect on the accuracy of the self-reported behaviour amongst the more frequent, potentially more problematic gamblers. Factors such as this have not been taken into account here and yet may have a bearing on the self-report data.

If self-report measures are to be investigated further alongside the combined implicit tasks, further research is required to see if self-reported reduction in problem gambling is continued in the long term with or without change in these other measures. However, another approach would be to remove attempts to accurately capture data on gambling engagement through self-report. Baumeister, Vohs and Funder (2007) propose a move away from self-reports as they often do not accurately report actual behaviour in general. LaBrie, Kaplan, LaPlante, Nelson and Shaffer (2008) highlight that self-report measures of gambling prevalence and engagement do not always correlate with actual behaviours, when compared to data captured via actual online activities. Online methods of capturing actual gambling behaviour would potentially reveal changes in behaviour related to changes in self-perceived problems that are not reliant on using traditional self-report methods. There is also the important question of the stages of change in gambling addiction, and whether as Orford (2012) suggests the first stage is a change in self-evaluation but not of actual behaviour, which is one possible explanation of the results found here.

The next two chapters will explore in more depth the narrative content of what the gamblers actually said during their time in the research programme, in an attempt to discover if there is more to be understood by exploring what gamblers say about themselves, than simply measuring using traditional methods.

# Chapter Five: Qualitative Data Theoretical Analysis

## 5.1 Introduction

Previous chapters, Three and Four, have focussed on the quantitative analysis of the self-report measures, implicit tasks and broad computerised analysis of interviews. The findings from Chapter Three demonstrated strong relationships across all self-reports of gambling engagement, fallacious beliefs and dissociation with problem gambling. When analysed alongside the implicit tasks (Roulette MouseTracker Task and Gambling Stroop Task) and quantitative analysis of the interview data, elements from each made a significant contribution to the prediction of problem gambling. When examining change in problem gambling in Chapter Four, the elements that had predicted problem gambling across the sample in Chapter Three were not found to be predictive of change in problem gambling.

Whilst participants reported change in the self-reported PGSI, no other elements accompanied that change elsewhere in either the implicit tasks or the self-reports. Explanations for this have been discussed in Chapter Four, but one of the key considerations is that the self-concept of problem gambling changes before any underlying processes or actual behaviour change occurs. The aim in the current chapter, Chapter Five, is to examine in more detail what is actually being said by the participants who both scored higher on the PGSI and also demonstrated change in their PGSI scores throughout the process. Therefore, a qualitative approach is adopted.

There have been several recent qualitative investigations of gamblers. Applying mixed methods, Neighbors, Lostutter, Crounce and Larimer (2002) examined the motivations of a large sample (184) of college students who gambled. They applied a qualitative approach in asking the participants to state their personal gambling motives and then establish the most common themes of gambling motivation from 766 alternative suggestions given. There were 16 main motives identified, which can be viewed under certain collective themes. Several motives fall under social influences, for example the social interaction obtained through gambling, conformity, competition with others. There were also elements of dissociation, such as occupying time, excitement or risk. Negative associations were also identified such as using gambling as a coping mechanism, chasing losses and linking gambling to drinking behaviour. However, the approach did aim to analyse large amounts of brief qualitative data, without allowing in-depth disclosure from the participants or detailed analysis on the part of the researchers.

Wood and Griffiths (2002) also examined younger people's perceptions of gambling using a qualitative approach, specifically lottery and scratch cards in semi structured group interviews. Many of the same themes emerged from this study in comparison with the Neighbors et al study. Social aspects and dissociation as well as awareness of negative aspects of gambling behaviour emerged. The qualitative approach adopted was more in depth and rich in comparison with the study by Neighbors et al, by adopting grounded theory and obtaining

fuller qualitative data through different methods. However, interestingly utilising more involved methods of data collection and rigorous bottom up analysis, very similar themes emerged. Wood and Griffiths (2007) also examined the role of gambling as a means of a coping strategy amongst problem gamblers and found that alongside the motivation for escape, several other key points of interest were found. Gamblers reported in the motivation to gamble for experience rather than money, if they were in later stages of their gambling careers. As well as this, references to fallacious beliefs regarding control over gambling outcomes, chasing losses and cognitive regret, and gambling to avoid conflict and life problems were found.

More recently Parke and Griffiths (2010) undertook an interpretive phenomenological analysis of gamblers (N7), exploring the impact and beliefs around the use of information technologies to enhance gambling success. They examined gamblers experiences and motivations in relation to the use of IT systems, and discovered that awareness of controlled gambling possibilities leads to an increased individual awareness of gambling motivations. Primarily, that gambling behaviour is largely motivated by entertainment, rather than profit.

Grounded theory has also been recently applied to explore some of the key differences with gamblers that might consider themselves 'professional' poker players, to recreational poker players. McCormack and Griffiths (2011) interviewed nine poker players (three professional, one semi-professional and five recreational). The primary finding was that professional players have more discipline, are controlled and logical in their behaviour and take fewer risks. Recreational players lacked control, chased losses and engaged in gambling whilst using alcohol or drugs. Control has also been found as a major theme amongst a group of internet gamblers (N25) with varying levels of gambling problems. Interviews were analysed using IPA, and found a combination of cognitive and behavioural aspects of gambling behaviour were used when describing control during gambling experiences (Hing, Cherney, Gainsbury, Lubman & Wood (2014).

There have been several varieties of qualitative approaches adopted within the gambling addiction field, however most examine a brief cross section of gambling behaviour at a specific time and place, and fail to explore qualitative changes in gamblers attitudes, values and beliefs that occur over time. As established in Chapter One, problem gambling is believed to exist along a continuum and as such, it is expected that levels of problem gambling may change. There has been one recent qualitative longitudinal exploration of gambling behaviour, by Reith and Dobbie (2012). By interviewing 50 gamblers with various levels of problems, four times over five years, the findings were that change rather than stability was the norm. Key findings related to qualitatively different trajectories of behaviour, highlighting movement in and out of problem levels of gambling, affected by social context and environment. The recommendations from Reith and Dobbie are that more longitudinal research into problem gambling is required that focuses on patterns of behaviour amongst gamblers. In other fields of addiction, specifically heroin use, research has been conducted in examining the changes that take place over time in addiction narratives. Davies (1998) and Goncalves et al (2010) have adopted theoretical approaches to analyse the structural changes in qualitative data over time. By identifying structural markers, alongside theoretically driven characteristics of addiction narratives, this has enabled the identification of quantifiable change in addiction narrative structures from low to high phases of addiction. This chapter will incorporate some of the qualitative characteristics identified in previous gambling literature, alongside addiction and behaviour change theory, and the quantitative findings from Chapters Three and Four. These elements will be adopted alongside structural approaches to identifying change in addiction narratives, such as those used by Davies (1998) and Goncalves et al, (2010). By comparing narrative accounts given by gamblers at different stages of problem behaviour, the aim is to see if patterns can be identified that differentiate between low and high problem phases of gambling behaviour.

## **5.2 Method**

The essential part of the interview process and materials used are detailed in Chapter Two. The following sections will detail the design, participants, materials and procedure employed for the qualitative data examined in this chapter.

### **5.2.1 Design**

The approach here was mixed. Including the collection of qualitative interview data, but also involving quantitative analysis of that data. The design of this quantitative analysis aspect of the study was 2x2 repeated measures. Each participant had a low scoring interview and a high scoring interview as determined by their self-reported PGSI scores. Interviews were selected for each participant on the basis of being that participants highest or lowest scoring interview during the whole research process. Therefore, for each participant there were two interviews. Within the two interviews the transcripts were coded for either positive (moving away from problem gambling) or negative (moving toward problem gambling) giving two measures for each interview. Therefore, for each participant a low PGSI interview, with positive and negative measures and a high PGSI interview, again with positive and negative measures were analysed.

### **5.2.2 Participants**

From the larger sample of 60 initial participants, and then 41 who attended more than one session, a selection of key participants were looked at in more details for changes in self-narrative revealed over time. The participants have been selected due to movement on the PGSI scale. 41 participants were too many to analyse in a meaningful way for the intended analysis and not all participants changed during the interview process. As this analysis is to explore both issues of change and degree of problem gambling amongst the participants, the movement in PGSI scores was examined and three levels of selection criteria were applied. The criteria were based upon the two main factors of change and problem gambling. The

participants selected are therefore deemed to be the most changeable and problematic gamblers from the 41 who attended more than one session.

The first criterion for selection was to have moved by at least three points on the PGSI scale during the series of interviews attended, and to have at one point during the interviews to have scored within the highest level of problem gambling (a score of 8 or more on the PGSI). 6 participants fell into this category. See table 5.2.2.

The next selection criterion was for participants who showed the greatest degree of change, more than five points on the PGSI, but did not reach the highest level of problem gambling during the duration of their sessions. Two participants were selected using these criteria. See Table 5.2.2b. The final selection criteria was for any participant who scored consistently within the highest level of problem gambling, but also demonstrate some degree of change. There were four participants who were selected on this basis. See Table 5.2.2c. Table 5.2.2 shows the first selection of participants, 3 points of change and either into or out of high level PGSI. Half of those reported moving away from problem gambling, and half moved further into problem gambling.

Table 5.2.2 Participants who moved more than 3 points, across a category, and are problem gambler's at least once during the research

<b>Participant</b>	<b>Low session</b>	<b>Lowest PGSI</b>	<b>High session</b>	<b>Highest PGSI</b>	<b>Score difference</b>
<b>7</b>	1	7	2	10	3
<b>12</b>	4	3	2	8	5
<b>27</b>	4	3	2	9	6
<b>30</b>	6	5	4	11	6
<b>35</b>	2	5	1	9	4
<b>55</b>	1	6	2	10	4

Table 5.2.2b shows the two participants that have demonstrated the greatest change in PGSI scores throughout the process, but not reported the highest level of problem gambling.

Table 5.2.2b Participants who moved more than 5 points on the PGSI but not been problem gamblers

<b>Participant</b>	<b>Low session</b>	<b>Lowest PGSI</b>	<b>High session</b>	<b>Highest PGSI</b>	<b>Score difference</b>
<b>29</b>	2	2	1	7	5
<b>37</b>	3	0	2	6	6

Finally, four participants were noted as being the highest scoring problem gamblers and showed some levels of change during the process, however always remained within the highest category of PGSI (Table 5.2.2c)

Table 5.2.2c. Problem gamblers who have reported change, but not across a category (remained problem gamblers)

<b>Participant</b>	<b>Low session</b>	<b>Lowest PGSI</b>	<b>High session</b>	<b>Highest PGSI</b>	<b>Score difference</b>
<b>16</b>	1	13	2	14	1
<b>34</b>	2	8	1	9	1
<b>53</b>	2	14	3	18	4
<b>56</b>	1	13	2	14	1



Collectively these twelve participants form the group of key participants who demonstrated the combination of greatest movement during the process and highest levels of problem gambling, and it is these twelve that form the basis for analysis in this chapter.

### **5.2.3 Materials: Development of a theoretical analysis map**

Both Davies and Goncalves et al, approached addiction narratives by identifying structural and qualitative dimensions in a measurable way by using a theoretical framework anticipating the kinds of speech acts that might be observed. The present research also aims to identify key speech acts within gamblers narrative accounts. Gamblers' narratives have been taken at different points, at the individual's highest point of self-reported Problem Gambling and at their lowest point of self-reported Problem Gambling during the research process. Therefore, a similar approach has been adopted in terms of identifying if a certain dimension occurs within the narratives at the different points on the continuum. Rather than simply identifying whether a certain dimension is present, or restricted by a Likert Scale, dimensions were counted for their presence during the interviews. This approach required identifying the kinds of qualitative dimensions that are of particular interest when exploring gamblers narratives. Taking key theories discussed in Chapter One, narrative dimensions relevant to addiction, gambling addiction specifically and behaviour change were established.

Orford's model of Excessive Appetites (2001) discussed in Chapter One, includes multiple social and personal determinants of addiction. It includes factors such as attachment, reinforcement through cognitive behavioural learning, positive incentives, coping strategies and associated cues which produce expectancy. Attachment develops through negative reinforcement cycles, chasing behaviours and neuroadaptation. Conflicts are created through demoralisation, costs and compulsive adherence to negative behaviour cycles and a decision is made to either attempt to change, or continue in an addictive pattern. Orford places all of these processes along a continuum held in place by social and moral contexts which facilitate

or help reevaluate the addictive behaviour, contributing to the individual's outcome (see Chapter One).

There are several approaches to understanding change processes that were discussed in Chapter One. One of the most well established is the Stages of Change Model/Transtheoretical Model of Change (Prochaska & DiClemente, 1998) which highlights some of the factors that are believed to identify processes of change in such stage models. Whilst there is criticism of the model, it is also acknowledged as a viable descriptive tool, useful in explaining change processes, if not capable of assisting in or determining how and when a change in behaviour will actually take place. It is also regarded as an effective model in a context of gambling behaviour (Petry, 2005). The Transtheoretical model is therefore applied here to exemplify some of the processes that are often found in such stage models and may be useful and applicable to the theoretical approach in understanding change processes amongst gamblers.

In addition to the general theories of addiction and behaviour change, there are also concepts that are gambling-specific. These concepts, discussed in Chapter One describe the relationships between certain cognitive distortions and problem gambling, fallacious beliefs and decision-making, as well as theoretical understandings of gamblers and their behaviour and explanation of their behaviour. It may be expected that that certain types of statements could be observed in gamblers narratives. Taking key aspects of the elements from the previous theoretical approaches to behaviour change, gambling addiction and self-narrative, and by collating key commonalities between models and the various types of statements expected amongst gamblers who have changed during the interview process, a narrative 'map' from which interviews of gamblers can be analysed has been devised. The key aim is to see if certain generally recognised aspects mentioned in the above models of addiction and change can be observed in gamblers natural speech at different times; when they self-report as being either higher or lower on the problem gambling continuum (PGSI). For instance, do people make reference to social or environmental factors having a positive or negative effect on them,

when they report lower levels of gambling problems? From the previous mentioned theoretical models, there are four key commonly referred to elements that can be identified that may be applicable when examining gamblers narrative and change. These are *Cognitive*, *Behavioural*, *Social* and *Environmental*, these were then used in a qualitative map to analyse the different interviews. The definitions and findings are detailed in the results section. However, the ‘map’ that was designed is shown in Figure 5.2.3 the definitions of which for use in this analysis follow;

<b>Factors</b>	<b>Away from Problem Gambling</b>	<b>Towards Problem Gambling</b>
<b>Cognitive factors</b>	<b>Positive</b>	<b>Negative</b>
Attitude/Affect Self-evaluation		
	<b>Explicit understanding of probability and randomness or lack of dissociation</b>	<b>Present/ Illusion of control/’buzz’</b>
False beliefs Dissociation		
<b>Behavioural Factors</b>	<b>Positive control/ Decreased gambling involvement</b>	<b>Negative, loss of control/ Increased gambling involvement</b>
Control Movement		
<b>Social Factors</b>	<b>Positive/Discouraging gambling</b>	<b>Negative/Encouraging gambling</b>
Friends/Family		
<b>Environmental factors</b>	<b>Restraint/Away from problem gambling</b>	<b>Availability/Access/Towards problem gambling</b>
Physical/Moral		

Figure 5.2.3 Theoretical analysis Map

#### **5.2.4 Procedure**

The interview strategy was as described in Chapter Two. The interview portion of the research involved semi structured interviews that lasted typically between 15 to 30 minutes. Following a format that utilised previous interview strategies with gamblers (Wardle et al, 2009) and allowing participants to reflect on past, current and future behaviours. The strategy also incorporated elements of wider concerns, such as how their gambling behaviour might be viewed by others who know them, and if they consider there to be any effects of their gambling behaviour on other aspects of their life. Transcripts of the interviews are available in Appendix 2.

The aims of the interview structure were to allow the participants scope to discuss a broad range of aspects relating to their gambling behaviour in a relatively short time, and allow them an opportunity to reflect during the interview on their own thoughts and feelings regarding their gambling behaviour. There were also questions that allowed for consideration of gambling behaviour in relation to others, i.e. friends and family and the gambling environment/institutions. Following previous literature in the areas of addiction, gambling addiction specifically and behaviour change described in Chapter One, a theoretical approach was adopted to explore aspects of natural speech that reflected factors considered within the literature to have a bearing on peoples gambling behaviour.

As mentioned in the introduction to this chapter, there is no assumption that the utterances of problem gamblers reveal direct insight to internal processes. However recognisable patterns in speech behaviour may be found in the context of previous theory and findings. Rather than over analysing the meanings behind speech acts and attempting to interpret underlying meanings, the Theoretical analysis focuses on whether the individuals simply make reference to each of the above domains, and whether that reference is positive (moving away from problem gambling behaviour) or negative (moving toward problem gambling behaviour). There is no attempt to make inferences regarding any further

interpretation, only that recognisable patterns of speech acts are present. Each category can then be described as positive, if predominantly moving away from or reducing gambling, or negative if predominantly moving toward or increasing gambling behaviour. It is anticipated that a participant interview that is predominantly negative across most domains would relate to high scores on problem gambling criteria measured on the quantitative measures.

The interviews from each participant's interview sessions were coded against the gambling narrative map, blind as to the self-reported PGSI score ascribed at the time of each interview. When an utterance was deemed to clearly fall in one of the cognitive, behavioural, social or environmental factors it was then judged as whether it was positive – moving away from gambling, or negative moving toward gambling behaviour. A mark was given for each clearly defined utterance. The 12 participants that were selected then had all of their interviews analysed using the top down qualitative map. As mentioned, the interviews were analysed blind, without the researcher knowing the quantitative measures that corresponded with each interview transcript. The qualitative map was used to record any utterance that was deemed to clearly fall within a specific factor based on the definitions stated in the next section (section 5.5). The aim was to, without over interpretation, identify if a statement made by the participant fell clearly into a specific category on the map. If and when a statement was identified it was simply recorded as a unit on that specific factor.

Each interview was analysed three times using The Map, to ensure each utterance that could be categorised was included in the final analysis. During the first wave of analysis the transcripts were coded and annotated throughout the process and the factors were examined to ensure clear usable definitions were being applied. If the category definitions were found not to capture statements with enough clarity, they were adjusted accordingly to sharpen the definition. Once all interviews had been analysed, the process was then conducted again using the adjusted definitions and taking into account any clarifications of previous ambiguities. A third analysis was then conducted using the final adjusted factor definitions to ensure that all key statements were being captured and clearly defined. Each utterance that could be captured

using the Map was counted as one unit score in that category, giving each interview transcript a score for each time a specific type of statement was made during interview, as well as a total number of positive and negative statements during interview.

After analysis, the quantitative scores for each interview were compared and the interviews were identified that fell on the highest and lowest scoring PGSI scores. Giving each participant a low scoring session (interview that corresponded with lowest self-reported PGSI score) and a high scoring session (interview that corresponded with a high scoring PGSI score). Comparisons of the scores across high and low interviews with comparisons for positive and negative statements are presented in the results section which follows.

### 5.3 Results

The results are presented in two sections. Initially the definitions and quotes that were identified and used the theoretical analysis map, then the quantitative analysis of the data collected using the map procedure.

#### 5.3.1 Definitions and quotes

To fully explain the categories identified in the thematic map, definitions of each category are presented here, along with corresponding past research and examples from the interview data.

##### 1. Cognitive Factors

Items of conscious consideration in relation to behaviours, feelings or thoughts. These include attitudes and affect, self-evaluation, fallacious beliefs and dissociation.

**Attitude/Affect** – Are experiences of gambling enjoyable or not? Is gambling viewed in a positive or negative light? Following some key aspects of Davies Drugspeak (1998) in which Davies identifies drug user's experiences as being positive and enjoyable pre-addiction, but not during the addicted phase.

Example quotes from participants that are identified (sex, age);

Participant 7 (Male, 19) session 1

*"It's fun and er and basically you win some money out of it and then having fun yeah"*

**Self-evaluation** – Self-evaluation of behaviours and thoughts surrounding gambling behaviour. Self-ascription to addiction for example would be negative. Following Drugspeak (1997) and factors from the Stages of Change model (1998). Individuals who view their gambling choices in a positive light, or praising their gambling aptitude would be giving a

positive self-evaluation. Those who are disparaging about their gambling behaviour or critical, would be categorised as negative, even though the positive self-appraisal regarding gambling behaviour may be argued to lead to increased levels of gambling, it is the context in which the gambler hold the behaviour that is important. E.g. is their gambling a positive experience, or a negative experience that leads to a positive or a negative self-image.

Participant 53 (Male, 45) session 1

*“You just you make yourself, it’s as if you like making yourself feel like crap like basically.*

**False beliefs** – Present when the participant make reference to illusion of control (Langer, 1975), misunderstanding of probability, or the gamblers fallacy (Kahneman & Tversky, 1974). This also includes reference to identifying systems or patterns, luck and knowledge leading to increased chance of winning in random situations. Alternatively, individuals may clearly state that they understand probabilities and randomness, and the lack of control they have in gambling activities. A clear relationship has been identified in the current research between problem gambling and higher scores on the fallacious beliefs self-report measure in Chapter Three, which supports previous research (Hudgens-Haney et al., 2013).

Participant 53 (Male, 23) session 1

*“We won on the lottery on both days, it was only like a tenner and then with four numbers it was about a hundred pound, but within a week it was just like, we didn't lose anything. so I thought I was, I thought I was quite lucky and we got tattoos, we got lucky tattoos put on us and then from then I think I started gambling a bit more”*



**Dissociation** – Present when the participant makes reference to getting a buzz, or losing track of time, or gambling as an emotional outlet. Alternatively, individuals may mention that such experiences are now lacking. Again, a clear relationship has been identified between dissociation and problem gambling in the current research, with dissociation being one of the key predictors of Problem Gambling found in Chapter Three, supporting previous findings (Wood, Gupta, Derevensky, & Griffiths, 2004). It is not anticipated that a clear reference to lack of dissociation will be identified, unless it is reference to no longer achieving a ‘buzz’ where once there was.

Participant 53 (Male, 45) session 1

*“There’s a couple of things on there saying you don’t notice other people and you don’t sometimes whether you’re winning or losing, you go into a little bubble really. Well I do anyway.”*

## **2. Behavioural Factors**

Physical behaviours of the individual, which could be abstinence or absence of behaviour in the case of exerting control, or references to movement in evaluative space as described by Potter and Wetherell (1987) describing behaviour change.

**Control** – Participants making reference to behaviour demonstrating lack of control, such as exceeding time and money limits, having no clear limits, chasing losses or generally being disorganised in their gambling behaviour e.g. having multiple gambling activities (generally more than three different gambling activity types in a week) with no clear preference or reason for choosing one over another. There could in comparison be reference to positively maintaining control, walking away after a loss or a win, maintaining limits, being organised and selective in gambling choices. A key concept in behaviour change and addiction models (Orford, 2001; Prochaska & DiClemente, 1998)

Participant 53 (Male, 23) session 1

*“So I have like a limit each day and I have some of my accounts online that I’ve kind of limited them myself so I can’t physically put more money in if I wanted to.”*

**Movement** – Does the participant make reference to qualitative movement in evaluative space, either positive – i.e. away from gambling, or negative – toward gambling? i.e. “I’ve definitely been putting more money on since last time”, or “I am not going to the bookies as often as I was”. One of the key narrative factors presented by Wetherell and Potter when explaining constituent parts of any narrative (1987).

Participant 37 (Male, 31) session 3

*“Probably averaging a little bit less, because erm, don’t go out too much now. So I wouldn’t be likely to use a quiz machine or have a go on a fruit machine. So I don’t spend anything on that, er erm, and my stake now that I put on the on the horses is er, is lower.”*

### **3. Social Factors**

Contribution by another person or persons in the attitude or behaviours associated with gambling, either positive or negative. Findings from Chapter Four were that a significant increase in social references during interview measured by the LIWC2007 correlated with increases in the changed PGSI scores. The social element is a key factor as described by Orford in the Excessive Appetites Model (2001).

**Friends/family** – Any reference to social elements that refer to either contribution by friends or family which discourage gambling, such as *“My parents don’t like me gambling”* or input which encourages further gambling involvement. I.e., *“My friends ask me to the poker game”*.

Participant 12 (Male, 19) session 2

*“It was mainly my dad that sort of mentioned it to us [Betfair – Online gambling], ‘cause he’s he’s starting to use that now, more than he used to. So I joined because erm, one of my mates had an invite system, where I got like twenty five pound free bet, the usual sort of thing so I would say because of that I’ve been betting a lot more online than er, than normally, probably with a bit more money as well.”*

#### **4. Environmental factors**

Either physical or wider societal pressures which contribute to the attitude and behaviour of the individual.

**Physical environmental factors** – Any physical factor outside of the participants’ control that encourages or facilitates gambling behaviour. For instance, are participants making references to the accessibility of gambling venues or opportunities, or encouraging gambling by establishments? E.g. advertising, online 24 hours’ access, or casinos being open after a night out and on their way home. Opposite to this the participant may make reference to limitations being made, due to a change of circumstances, for example moving to an area with less access to gambling establishments, or limitations being set by environmental factors out of their control, such as lack of money (not the same as behavioural control). Again the environment is a vital characteristic in Orford’s approach to addiction (2001, 2012).

Participant 7 (Male, 19) session 2

*“Past three weeks there’ve been like oh, um, promotions in the casinos. So you have to go every day to get a stamp. Every five stamps, you get like a scratch card to get like free chips or something. So I’d go every day. Like for the past three weeks. But yeah, I gamble more actually, but start running out of money”*

**Moral** – Identified if the participants are aware of moral objections to gambling, any changes in attitudes about gambling amongst the general public, or reasons not to gamble that demonstrate an awareness of wider social context. For example, references to changes in legislation or media that portrays gambling in a positive or negative light. Negative/Towards gambling would be mention of any positive changes in social attitudes that made the individual think that gambling was more acceptable, such as increased advertising, reduced legislation, or famous people advertising certain gambling activities suggesting a level of acceptance in popular society. These are not actual physical influences, such as accessibility, but wider societal influence on the participants' view of gambling. Once again found in Orford's theory of addiction and particularly in the context of erosion theory (2012).

Participant 34 (Male, 34) session 1

*"The FOB machines are getting; I quite dislike them. I've stopped gambling, well I've still gambled on them but not as heavy. I've started putting less money in them no. There was a BBC programme, well it wasn't BBC, there was a programme on channel four about them, where about how much money they made, and I was just absolutely out stand...out, I was like, whoa. They take more than the full betting industry alone, just on them machines it was saying. The government for every pound, sorry for every thousand pound they only put a pound towards the gambling care, like what you're doing, like for research and I don't think that's enough."*

An analysis 'map' was then produced which allows for identification of these common factors within a narrative, shown in Figure 5.2

### **5.3.2 Quantitative analysis of qualitative data**

A map was produced for each interview of each participant. Utterances were identified as falling into one of the categories on the map as described in the procedure, and on each occurrence of a particular category being referred to the participants was allocated one unit. For example, a participant may have made seven instances of referring to positive social elements during one interview, giving a score of seven for that element. After analysis the

interviews were identified as being either high or low scoring on the PGSI. Mean scores in each category were produced to give the average number of instances a particular category occurred during high and low scoring interviews. This gave a quantifiable measure of salient utterances categorised by the map, for each interview. The mean scores for all categories giving both positive and negative scores across high and low interviews are shown in Table 5.3.2, along with the total positive and negative scores during high and low interviews.

Table 5.3.2 Mean scores across categories for both positive and negative utterances during high and low scoring interviews.

N=12	Affect	Self-Evaluation	False Beliefs	Dissociation	Control	Movement	Social	Physical	Moral	Totals
<b>Low Positive</b>	3.25	3.42	0.42	0	3.92	0.42	1	1.33	1.33	<b>15.08</b>
<b>(S.D.)</b>	(2.3)	(2.68)	(0.67)	(0)	(3.26)	(0.67)	(2)	(1.83)	(3.14)	<b>(6.64)</b>
<b>Low Negative</b>	3.33	3	3.92	1	4.42	1	4.17	6.25	0.33	<b>27.42</b>
<b>(S.D.)</b>	(2.84)	(3.72)	(4.10)	(1.28)	(1.62)	(1.76)	(2.95)	(4.35)	(0.89)	<b>(11.32)</b>
<b>High Positive</b>	2.5	2.33	0.25	0	2.5	0.83	0.67	1.25	0.33	<b>10.67</b>
<b>(S.D.)</b>	(2.11)	(2.10)	(0.62)	(0)	(1.51)	(0.94)	(0.65)	(1.29)	(0.65)	<b>(4.25)</b>
<b>High Negative</b>	5.42	5.5	2.42	1.67	5.58	1.42	4.08	4.83	0.42	<b>31.33</b>
<b>(S.D.)</b>	(3.12)	(5.49)	(1.98)	(1.61)	(2.61)	(1.78)	(2.57)	(2.89)	(1.17)	<b>(12.14)</b>

A repeated measures ANOVA examined high and low scoring interviews across positive and negative statements. When comparing overall number of salient statements during high score interviews to low score interviews there was no difference in the number of statements made. This suggests that participants make an equal number of salient statements in both high scoring and low scoring interviews, and therefore any differences found are not simply down to the overall quantity of measurable utterances in different types of interviews. The mean number of salient statements made in both high and low scoring interviews were almost identical, with high scoring interviews there were an average of 42.00 measurable statements per interview, with 42.5 in low scoring interviews.  $F(1, 11), 0.32, p=.861$

When comparing the total number of positive and negative statements made during the interviews, irrespective of whether they occurred in high or low scoring interviews there was a significantly larger number of negative statements. Mean number of positive statements across low and high scoring interviews was 25.75. The mean number of negative statements across both low and high scoring interviews was 58.75.  $F(1, 11), 20.189, p=.001$ . Remembering that negative statements in this sense refer to statements that refer to behaviours or attitudes that lean toward increased levels of gambling, this is in keeping with the fact that the sample are all active regular gamblers.

The main interest here lies in whether during high scoring PGSI sessions, the participants make more negative and less positive statements than they do during low scoring sessions. Indeed, there is a significant interaction taking place when comparing positive and negative utterances across the high and low interviews.  $F(1,11) 7.037, p=.022$ . This suggests that during interviews where gamblers report less problem gambling via the PGSI measure, they make more positive statements, (statements that incorporate movement away from problem gambling) and fewer negative statements (statements that involve movement toward problem gambling). Likewise, during interviews recorded during periods of the highest levels

of problem gambling, there are fewer positive statements and an increased number of negative statements. This interaction is presented in Figure 5.3.2

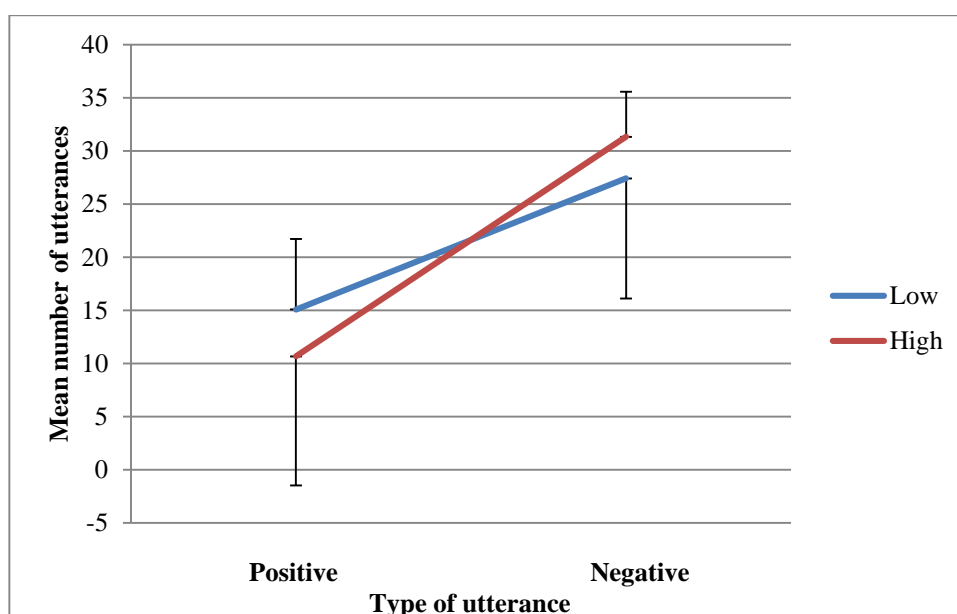


Figure 5.3.2 Interaction between type and number of utterance (positive and negative) during high scoring and low scoring interviews (N=12)

This demonstrates the application of the previously mentioned theories surrounding addiction, gambling and behaviour change. Using the Map, devised from key characteristics of the above mentioned models of behaviour and applying it to real life verbalisations by changeable gamblers, presents a coherent measure of the differences experienced when those gamblers report higher and lower levels of problem gambling. During high problem gambling phases, the verbalisations include an increased number of negative statements, or statements that suggest a move toward problem gambling, with fewer positive statements, or statements that suggest movement away from problem gambling. Likewise, during low scoring self-reported phases, the positive statements increase and the negative statements decrease.



## **5.4 Summary**

### **5.4.1 Limitations**

The approach here was to incorporate a quantitative view of qualitative data. This does not always sit well with researchers, often believing the two to be wholly incompatible. The development of the factors used in analysis came solely from one researcher's perspectives, and therefore potential biases. It could be the case that in the process of designing and implementing the research methods, and then developing the instrument used in this chapter, that a degree of inevitability could be assumed in connecting the aims to the findings. However, as each was developed separately over a period of sometime and then analysed blind to the levels of problem gambling associated with each interview, this bias was hopefully reduced to a minimum. This could be strengthened by involving other researchers in both the development of the instrument (The Map), and also the application of it against the interviews. This would give a degree of inter rater reliability that has not been applied here.

### **5.4.2 Overall summary**

These findings add support to the theories being applied in this process, in terms of behaviour change and gambling addiction. When talking to gamblers who display high levels of problem behaviour and change, not only are they found to make reference to aspects of current theories in their own experiences, but there is a measurable change the way they describe their gambling behaviour and experiences between times of problem behaviour and when they experiencing a reduction in their problem gambling. This includes not only their own attitudes and self-ascription to problem behaviour, but also wider social references such as the influence of family and friends as well as the wider moral context within which they view gambling behaviours. It would appear therefore that current theories described earlier in this chapter and detailed in Chapter One, are very much applicable amongst current gamblers. The application of traditional self-reported behaviour measures when compared with this

theoretical approach to interview data adds to the coherence and robustness of current ideas around problem gambling. However, it is not the case that for each participant the same patterns emerge, but rather that using this technique a general pattern can be observed. The individual idiosyncrasies of each participant's experiences make for much more complex reading, and so rather than over emphasise the benefit of this tool, a more in depth traditional qualitative analysis has been undertaken in Chapter Six, exploring the interviews in more detail and identifying some of the key differences and similarities between changeable problem gamblers and themes that emerge from Interpretative Phenomenological Analysis of gamblers narratives.



# Chapter Six:

# Qualitative

# Data

# I.P.A

## 6.1 Introduction

Following the theoretical analysis described in Chapter Five, Chapter Six describes an Interpretative Phenomenological Analysis (IPA) of the interview data produced by key participants of interest. This acknowledges the interpretative nature of both the analysis and the original self-reporting of behaviour.

The same 12 participants' data that were analysed in Chapter Five are examined here. Rather than only selecting two interviews from each participant (high scoring and low scoring), every interview from each of the 12 participants are included in the analysis. The aim in this chapter is explore the gamblers accounts of their behaviours during the research process. Theoretical issues with self-report data and the veracity of qualitative data have not been forgotten from Chapter Five.

### **6.1.1 Interpretive Phenomenological Analysis**

The Interpretive Phenomenological Analysis (IPA) approach has become increasingly popular in qualitative studies (Brocki & Weardon, 2006) particularly health psychology. IPA stems from a theoretical standpoint which acknowledges people as more than simply passive observers of the reality they find themselves in, but rather as interpreters of their surroundings, forming meaning and understandings which are constructed into coherent accounts of their lives and behaviours. One of IPA's aims is to examine the way in which people make sense of their worlds. This is often done by asking people to describe the experiences and processes they have had in relation to a certain phenomenon. With a degree of assumed self-reflection on the part of the individual, IPA centres on peoples' descriptions and understandings of processes, perceptions and experiences, and the meanings and emphasis placed upon them by that individual. IPA also adopts a view that people seek out a meaningful construct from their experiences, and so seek to interpret events in a way that is of value to themselves and enables them to understand events in a coherent way.

The phenomenological aspect of IPA acknowledges that the approach is concerned with subjective accounts, rather than an attempt at revealing objective truths. It is interpretive in two senses, acknowledging the dynamic process of interpretation taking place by the individual as they give account of themselves, and the interpretation of the researcher in analysing that account. This is an acknowledgement of the researcher's central role in research and analysis, and that the final outcome is held between both the participants' ability to self-report their own thoughts, behaviours, motives and experiences accurately and adequately, and also by the researcher's ability to competently interpret and analyse the product of the participant (Baillie, Smith, Hewison & Mason, 2000).

IPA has increasingly been used in health research and has been adopted as the methodological approach in several qualitative studies of gamblers and addiction (Parke & Griffiths, 2005; Larkin & Griffiths, 2002 -2004). The use of qualitative methods such as IPA

is regarded as a valuable addition to traditional quantitative methods in the areas of health and psychology, to further understand models of behaviour and processes taking place within such models. Whereas previously there has been a long standing attitude that qualitative and quantitative methods of analysis are incompatible (Smith, 1996), particularly between social cognition and discourse analysis (DA) where the particular DA approach has been epistemologically at odds with quantitative methods, IPA is offered as a method compatible with both qualitative and quantitative approaches (Clare, 2003). Like DA, IPA is concerned primarily with a qualitative methodology, but also with cognitions. However, some of the challenges DA makes to a cognitive approach do not always allow for the predisposed health psychology views concerning behaviour change, cognitions and physical state (Smith, 1996, Potter & Wetherell, 1987).

With this in mind, some researchers have managed to incorporate dual aspect approaches, stating that the approach used should best suit the research being conducted. Holt and Slade (2003) argue that the validity of qualitative approaches should be assessed in relation to the application of emergent analysis in similar situations. Johnson et al (2004) adopted both Foucauldian DA and IPA arguing that the same phenomenon can be constructed in different ways by the individual and the researchers approach should reflect that. Brocki and Weardon (2006) argue that a fault of some qualitative research is the adherence to conventional or traditional approaches, in an attempt to provide some credibility through association to previous work, when in fact previously applied generalisable methodologies may not be the most appropriate approach in the new work.

### **6.1.2 Interpretive Phenomenological Analysis: Methodology**

The guidelines for IPA are aimed at providing an accessible methodology intended to be flexible and therefore allowing adaptation and development as appropriate for the specific research to which it is being applied. There is a basic process of moving from the descriptive to the interpretive, and in no way attempting to claim any objective outcome from a formulaic

or overly specific procedure. Smith et al (1999) state that an overly prescriptive methodology for IPA is inappropriate in relation to its aims, and intended outcomes.

Several studies have begun with a 'top down' (TD) or theoretically driven approach, as described in Chapter Five, when employing IPA. Collins and Nicholson (2002) started by noting anything from the transcripts that related to previous literature and theoretical models of their research topic. Swift, Ashcroft, Tadd, Campbell, and Dieppe (2002) also started from a theoretical standpoint, and explored their data for utterances that related to existing theory. Other researchers follow a 'bottom up' (BU) approach, common with other qualitative techniques, such as thematic analysis or grounded theory, and allow themes to emerge from the text (Smith, 1999). For the current research both approaches have been followed, firstly in Chapter Five the TD theoretical approach has been described. The BU analysis, although conducted prior to the TD analysis, is described in the current Chapter (Six). The reason for this is that the BU analysis goes into greater depth regarding the individual participants and the emerging themes of interest. Therefore, the theoretical approach which is more succinct, has been presented first. However, it should be made clear that the TD approach did not influence the identification of emerging themes in the BU approach, because the analyses were not conducted in that order.

Smith, Jarman and Osbourne (1999) recommend that one of the first stages in IPA is to make a list of themes from the data, and actually check that each theme is present in the data. The themes that are selected are not to be simply selected on prevalence, and great care should be taken to minimise researcher bias when selecting themes, however in keeping with IPA's acknowledgement that the researcher has a dynamic and interpretive role when analysing the data, there is a degree of acceptance that the theme selection will be underpinned by whichever theoretical and epistemological viewpoint the researcher is approaching from. There is a question raised by Yardley (2000) over the efforts made by researchers to check reliability when dealing with qualitative analysis. As mentioned qualitative methods involving

interpretation such as IPA are inevitably subjective, and if one of the intentions of a qualitative approach is to provide a richer exploration of a topic offering one of many interpretations, then reliability tested by comparing inter-rater analysis may not be appropriate criteria from which such qualitative analysis should be judged.

Against the question of objectivity of qualitative approaches, however, even having agreed inter-rater analysis does not produce an objective yardstick by which the analysis is being compared (Yardley, 2002). It does no more than offer agreement between raters, suggesting that the interpretation is credible. The aim of providing inter-rater analysis is therefore to validate the credibility of the outcomes offered, however, specifically when conducting theoretically driven TD analysis as was the case in Chapter Five, providing credible and coherent definitions is obtained by repeated individual analysis and refinement of definitions, rather than attempting to produce analysis that is closer in some way to a 'truth' by having several raters agree (Osborne & Smith, 1998). Willig (2001) regards IPA as an approach that allows more freedom and creativity when approaching qualitative analysis than some of its predecessors, and so it is from an IPA standpoint that the current analysis is conducted.



## **6.2 Method**

The method followed the overall method detailed in Chapter Two. The focus here however was on the in depth qualitative analysis of interview data gathered from the 12 key participants of interest, the selection of which is described in Chapter Five

### **6.2.1 Design**

A qualitative approach was employed as described in Chapter Two, examining interviews longitudinally using an IPA methodology.

### **6.2.2 Participants**

The same 12 key participants that were selected for analysis in Chapter Five were examined using the IPA method for more in depth analysis

### **6.2.3 Materials**

Interviews were conducted as described in detail in Chapter Two. Transcripts of interviews are available in Appendix 2.

### **6.2.4 Procedure**

The overall interview procedure is detailed in Chapter Two. Each participant was interviewed at every session they attended. The interviews followed the interview schedule as detailed in Chapter Two. Each interview produced by each participant was transcribed verbatim from the recordings by the researcher.

### **6.2.5 Analysis procedure**

As transcriptions were conducted notes were taken of initial thoughts regarding interesting items, themes or ideas that emerged. Once fully transcribed, the transcriptions were then loaded into N-Vivo, a qualitative data software tool. Using N-Vivo to manage the coding

process enabled identification and categorisation of large quantities of qualitative data in an organised and easily retrievable manner. N-Vivo also enables efficient cross referencing of codes and themes between different interview transcripts and different participants. Once transcripts were complete, they were read again making note of any comments of interest within a gambling framework. Using N-Vivo software, the comments were highlighted and identified under a common code (referred to as a node in N-Vivo). Codes were a short title, or name which encompassed the comment that had been identified. As codes increased during the analysis, comments of interest were either identified as an existing code, or a new code was created to correspond with the comment of interest. The coding process was conducted blind to the self-report measure data, therefore each interview of each participant was coded for utterances that were deemed interesting or relevant, without knowing which interview related to high or low scoring PGSI.

As the interviews were analysed, a database of codes and statements of interest was built up in N-Vivo. Using this process after analysing all of the participant transcripts for each session that they attended, 127 codes were identified. Whenever a statement was included, it was given a code heading and subsequent coded statements were added to existing codes, or introduced as new codes in the analysis. A full list of the codes identified using this process and the number of different sources and references made within the transcripts is shown in Appendix 3, Table A3.1. The codes were then grouped into sub- themes which encompassed the essence of several codes which were related conceptually. Each group of codes was given a sub-theme name. These can be seen in Appendix 3, Table A3.2 This process produced several sub-themes from the text; the sub-themes were finally grouped into six common main themes established from the analysis of the interview data.

There are a total of twelve key participants who demonstrated change and high levels of problem gambling during the research process. As part of the analysis procedure, for each participant an interpretative summary has been written for each interview they produced, alongside which any themes that emerged from each individual interview were noted. It was

also noted as to whether the participant is generally moving toward higher levels of problem gambling or away from problem gambling during their sequence of interviews. The number of sessions attended and the range of scores for the twelve key participants are shown in Table 6.2.5.

Table 6.2.5 The twelve key changeable gamblers sessions and PGSI scores

<b>Participant</b>	<b>Sessions attended</b>	<b>Low session</b>	<b>Lowest PGSI</b>	<b>High session</b>	<b>Highest PGSI</b>	<b>Score difference</b>
<b>7</b>	2	1	7	2	10	3
<b>12</b>	4	4	3	2	8	5
<b>16</b>	2	1	13	2	14	1
<b>27</b>	4	4	3	2	9	6
<b>29</b>	2	2	2	1	7	5
<b>30</b>	6	6	5	4	11	6
<b>34</b>	2	2	8	1	9	1
<b>35</b>	2	2	5	1	9	4
<b>37</b>	3	3	0	2	6	6
<b>53</b>	3	2	14	3	18	4
<b>55</b>	2	1	6	2	10	4
<b>56</b>	2	2	11	1	13	2

The narrative summaries for each participant are presented in Appendix 4. The twelve, changeable problem gamblers are presented, incorporating details of their self-report measures and an interpretative summary of each interview. For each interview key initial themes were identified and it was from these that the major themes were developed. This includes a summary of their demographic information, along with the number of sessions they attended and key self-report data in order to give a picture of their individual course through the research process. Each interview was given an interpretative summary along with the key

codes that were identified during each individual interview. This formed a large part of the analysis, and so is available in the appendix to demonstrate this aspect of the analysis procedure. However due to the magnitude of the content, the full process is not shown here. A complete account of the final major themes that have emerged throughout the qualitative analysis process are now presented in this chapter, along with definitions and example text taken from the interviews.

### **6.3 Results**

The interviews from all twelve key participants were analysed using the procedure described earlier in section 6.2. The process involved coding notable utterances in individual interviews, then comparing and grouping codes across all interviews. These codes were then grouped into conceptually related sub themes. A process was then conducted which then led to develop six main themes by grouping sub-themes that were conceptually related.

The main themes that have emerged from exploring the twelve key problem and changeable gamblers;

1. External influence and facilitation
2. Disorganised Behaviour
3. Conflict
4. Self-identity and narrative
5. Organised Behaviour
6. Change

The main themes are now described in detail with definitions and the sub-themes that were drawn together in constructing each main theme. For each theme there are specific quotes taken from excerpts of the interviews to illustrate both the main theme and any corresponding sub-themes and examples of coding.

### **6.3.1 Main theme 1: External influence and facilitation**

The first main theme includes any influence on gambling behaviour by peers, family or gambling institutions. Such influences appear to be a strong factor in why someone engages in gambling activities. These influences are external as oppose to internal influences such as the individual's choice to make a gambling decision purely for their own enjoyment or because they feel a specific gambling decision are pragmatic because of odds; belief in personal skill, knowledge or strategy that leads the individual to belief a particular gambling decision is financially practical. Participants with a higher proportion of external influences seem to find it more difficult to control their gambling behaviour. This theme incorporates references by the individual regarding reasons, facilitators and influences of anything outside the individual's reasonable decision-making being a factor as to whether or not they gamble. It includes any suggestion that the decision to engage in a gambling activity is due to external influence, rather than an autonomous decision to gamble. The main theme is divided into three sub-categories which are family influences, social influences and industry influences.

**Family** - influences largely relate to early years' experiences, typically being introduced to gambling by a family member, family acceptance and encouragement of gambling activities. Not all family influence is encouraging gambling behaviour; there is some reference to family disapproval. However, this also relates to the Conflict theme, in that often the disapproval comes from one member of the family, with encouragement coming from another family member, or where a family member gives mixed messages regarding their attitude toward gambling.

#### **Participant 34 (Male, 34) session 1.**

*"Yeah, I, dad gambled quite often, most of the family did, me brothers and that so, you just seemed to, your dad's ill, so he'd send you to the betting shop put a bet on for him, you think oh later on in life oh just gan to the bookies, he's had some big wins so it generally takes off from the family you know. Family and friends."*

**Participant 16 (Male, 21) session 1**

*“Obviously my mam and dad would put like the lottery on every week and things like that”*

**Participant 27 (Male, 20) session 4**

*“Well me mum put the lottery ticket on, er she put it on for me so she chose it”*

**Participant 29 (Male, 19) session 1**

*“Yeah, my dad used to gamble. He used to gamble on the football on Newcastle, and on the horses and that. Me step dad, he gambles quite a bit well not quite a bit but, so yeah er, probably started going to the match about seven or eight, round about then. Used to put the bets on at the match.”*

The above quotes demonstrate the ease with which family influences can be noted across several of the participants. Referring to family behaviours as ‘obvious’, and developing habits around gambling and sporting events have made the progression into gambling themselves almost automatic. There is not only acceptance from the family network, but also expectancy that they will follow the same behaviours

**Social** – Where gambling is engaged in primarily as a social activity, encouraged by peers, offering social status and providing the primary reason for gambling, rather than being motivated by simply winning money. Reference to the social aspect of gambling are common to supplement the enjoyment of watching a game of football, or the main reason to visit a bookmakers, over and above the actual involvement in gambling activities

**Participant 16 (Male, 21) session 2**

*” I think, I think a lot of its peer pressure, from, ‘cause like, like the group of friends that I’m in they’ll always put a bet on so you think, oh I’ll just go and do the same.”*

**Participant 12 (Male, 19) session 4**

*“Yeah I suppose there’s the social thing of like you know, going out with you know, going to betting shop with a few people off my courses. I suppose socially it’s a good thing really I suppose. “*

Again, when referring to the influence of friends, there is an acceptance that the behaviour is normal, and quite often positive. As mentioned by Participant 16 (Male, 21), there

is an aspect of peer pressure, although it appears that this is not something that they personally are too concerned about, it is more that they take this for granted.

**Industry Influences** - There is a mix of attitudes toward the industry, again relating to the Conflict theme. Reference is made to the way industry facilitates gambling, through offering preferential odds, marketing incentives and 24-hour access at physical venues as well as online gambling. There are few references to external industry controls, but often strong reference to mistrust and dislike of gambling institutions and their motives and the power they have over the individual.

**Participant 7 (Male, 19) session 2.**

*“Last two weeks, there’s like past, past three weeks they’ve been like oh, um, promotions in the casinos. So you have to go every day to get a stamp. Every five stamps, you get like a scratch card to get like free chips or something. So I’d go every day. Like for the past three weeks. But yeah, I gamble more actually, but start running out of money (laughs)”*

**Participant 16 (Male, 21) session 1.**

*“Phwww (laughs) er ....probably the fact that how easy it is like if, if like we didn’t have especially with the online part of things changing a lot of like for me, but if there was a book makers like two miles down the road like, you wouldn’t be bothered, but it’s the fact that you just need your phone or your laptop and you can just go on line and things like that so I definitely say yeah how easy it is. I don’t really like it but (laughs) it’s the world we live in.”*

Industry influences are spoken about as if they almost a necessary evil. Throughout the range of interviews there are references to the dislike or mistrust of industry, and the way they entice gamblers or appear only interested in profit, not the wellbeing of their customers. Not only do industry environments provide easy access to gambling in a variety of forms as mentioned by Participant 16 (Male, 21), they also promote additional temptation to increase or continue with gambling when gamblers would perhaps otherwise have not gambled, as mentioned by participant 7.



### **6.3.2 Main theme 2: Disorganised gambling behaviour**

**Disorganised gambling behaviour** is demonstrated by an individual engaging in multiple gambling activities, without discriminating between types of activity based on skill or knowledge. It also incorporates lack of limits or adherence to any kind of structure, plan or application of systems, control or application of skill or knowledge when engaging in gambling behaviour. Always finding something to bet on or referring to bouts of binge gambling, disorganised gamblers seem to score higher on the PGSI scale. The main theme of disorganised behaviour refers to lack of conscious rational decision-making when gambling. This includes reference to little or no attempts at controlling or successfully controlling gambling. Participants make reference to gambling sporadically or spontaneously without any forethought or planning and gambling erratically across many different gambling activities during the week or engaging in regular gambling habitually without conscious reasoning behind the gambling engagement. Disorganised gambling behaviour also includes false beliefs or illusion of control, and dissociation during gambling or attached to gambling attitudes. These two factors have been noted as having a strong relationship with problem gambling in Chapter Three when participants respond to self-report questionnaires, it is of interest to also observe reference to these concepts during self-narrative.

#### **Participant 37 (Male, 31) session 3.**

*“Just horse racing. Yeah erm, I went to the casino once about three-months ago, but yeah just horse racing. We had the tennis on Sunday, one or two football bets, but mainly just horses.”*

#### **Participant 16 (Male, 21) session 2.**

*“I think you put more, like, I’m more inclined now to put like silly bets on which is bad. ‘cause you’re reducing your stakes, you’re thinking you’re not losing as much but, you’re not winning either.”*

Participant 37 (Male, 31) exemplifies the way in which many of the gamblers will state that they are quite controlled or limit their gambling, and yet in the same sentence include several additional aspects of their behaviour that are included almost as an afterthought. This

may be part of their own self-delusion, or confabulation, but clearly demonstrates a lack of control over their behaviour and the narrative they use to describe it.

**Loss of control** - Any explicit reference to loss of control; activities such as chasing losses or binge gambling, or spending too much, regret at past gambling episodes due to lack of control. Ignoring restraints from either internal limits, or external recommendations by friends, family or establishments.

**Participant 30 (Male, 74) session 3.**

*“Er, sometimes I go on the er, the roulette. And I might lose. I don’t know, twenty quid, which is fair bit for me. I start off intending only to bet a couple of quid. The trouble is, you have a bet for say two or three quid ok. And a number comes up and you feel you should have had that number, that’s the trouble. And you start chasing, which is a mistake.”*

**Participant 34 (Male, 34) session 1.**

*“If you lose five hundred pound in one day that’s when you start to think to yourself oh bollocks, you know what I mean. I shouldn’t of went over the top the day you know.”*

**Participant 37 (Male, 31) session 3.**

*“it definitely does, you get emotionally pulled into it, and part of the thing is when the reels come in and you’ve gone in, you want usually, you want to, say you get three bells and there’s two, or three bells instead of four in a line, so you get this nearly winning, cycle which is probably going into people’s brains, I’m nearly winning, I’m nearly winning, which is probably part of what they’re feeding off. So I do generally think they need to be looked at you know, as somebody who has, I wouldn’t say I’m a problem gambler now, but it’s damaged, it’s damaged my life in some ways.”*

**Participant 55 (Female, 37) session 1.**

*“One of these leaflets, where ‘do you have a problem with gambling’ I ticked every box basically. “*

*“I’m not entirely sure, they’re just so addictive. You’re, once you’ve put one note in, you think, oh right well, I’ll just get it back and I’ll come off, and you can’t walk away.”*

Participants regularly made reference to the negative aspects of their behaviour, stating that they engaged in practices that they were not happy about, and suggesting in their talk that they were not always in control of what they actually did during gambling episodes.

This typically occurred during the highest problem phases of their interview sessions; however, it was also present in lower stages, when recollecting how bad things had once been. It was more typical to be present in the higher phases however, when gamblers were talking about their current battles with temptation (dual processing System One) and control (System Two).

**Habitual gambling** – This is reference to gambling for the sake of it, always finding something to bet on, and moving from one activity to another indiscriminately to maintain gambling engagement. This typically involves often gambling daily or intuitively whenever time or money is available. This represents a lack of organisation in actual bets placed, but does involve anticipation that time will be set aside to gamble.

**Participant 34 (Male, 34) session 1**

*“Eh, it’s just general you know, you do it every day, you don’t actually think about it, it’s just habit.”*

**Participant 34 (Male, 34) session 2**

*“Lottery’s what are they, Wednesday...Tuesday, Wednesday Friday Saturday, they’re all lottery days. Horse racing every day. ‘cause it’s on every day. Dogs basically every day. “*

**Participant 37 (Male, 31) session 1**

*“But if I sort of had some free time , particularly the horse racing is just on all the time, it’s constant, it’s, you know, it’s seven days and there’s usually a meeting at night, so you can probably find a race to be interested in.”*

**Participant 53 (Male, 23) session 1**

*“err, (pause) in the last like probably the last three-months it’s almost every day or every other day, I think I’m online aye. “*

**Participant 30 (Male, 74) session 1**

*“Oh, well I know it’s part of the game but I, I don’t like it, well, I start thinking you shouldn’t have had a bet in the first place, and sometimes you think you’re betting in races where you don’t really fancy anything.”*

**Participant 56 (Male, 45) session 1**

*“I think I just do it like matter of course really.”*

### **Participant 35 (Male 35) session 1**

*“Nah, nowt influences us I just like gambling. Just go in, I just like it aye. Same routine. All the time. Life eh. “*

For the majority of the gamblers selected for this part of the analysis, their gambling was a daily or almost daily habit. Done largely without any fore thought or planning, it was often simply assumed that participants would spend their time and money gambling if given the opportunity. There was also reference to the idea that often gamblers would be gambling without any enjoyment or satisfaction, or without any clear aim, other than to satisfy the habit of gambling.

**Two types (different gambling for different reasons) -** Across several participants there is reference to two different gambling activities which provide different emotional outlets and create different types of behaviour. For example, horse racing can be tempered and organised, whilst for the same individual playing FOBS can lead to highly erratic and disorganised binge type behaviour.

### **Participant 55 (Female, 37) session 2**

*“It’s never the rest of it’s never got out of control. I’ve never in my life put more than more than twenty pound on a horse and that’s only been on a really big occasion, but with the gambling like well, in less than a year I’ve got in fifteen thousand pound debt. Sought counselling and everything for it, because I knew it had to stop.”*

### **Participant 16 (Male, 21) session 2**

*“er, online slots is normally with friends, ‘cause they all crowd round to wait to see how much money I lose, but er, just betting like on football is just like er, just like on a break from work, or we just go and like put my bets on and then go back to work sort of thing, so that’s normally on my own.”*

### **Participant 37 (Male, 31) session 2**

*“Yeah I would say so, and I and the kind of the other types of gambling like the slotmachines and the casino they’ll be erm, erm more of like erm like an escapism thing I guess. And erm, always run erm bound up with drink as well. So it’ll be when I, that’ll be gambling I do when I’m drinking. Whereas if I’m doing horse racing erm, it might be something that I’ll have a look in my lunch hour or something, so it’s not erm, it’s not anything to do with drink. They are very different.”*

**Participant 53 (Male, 23) session 3**

*“I’ve seen that from, like I don’t, I don’t go down the casino. Even when I’ve had nights out with friends and have drinks and that, and we might go to the casino, but I find myself just spending like ten pounds. Or something. And I never like go over it. Because I’m not like, It’s weird to say I’m not with my money here, but then I go and spend a lot more online”*

**Participant 55 (Female, 37) session 1**

*“It’s probably quite low on the erm, horse racing, sometimes when I’ve played on the machines it’s got out of hand, which I’ve tried to kerb now, but in terms of how much I spend on the horses its minimal. Yeah. Oh yeah, I could happily go into the bookies with a fiver, and have a few little bets and be happy because I enjoy the sport and the challenge of it, but it’s there’s something different, with those machines there.”*

**Participant 37 (Male, 31) session 1**

*“Erm, in terms of other types of gambling, er I mean things like say the fruit machines and stuff or like the casino, it’s more about more like er, just going out and knowing that I’m not gonna win, in a way, that’s not really important, it’s just looking at blowing some money, entertainment type of thing, “*

Within the theme of disorganised gambling, one of the most striking aspects of behaviour is the difference between two types of gambling activity. For several of the participants it is not gambling in general that is a problem for them. Rather there is one main cause of concern, where they tend to lose control, chase down past bets and behave in a way that is not consistent across other gambling activities. During the research process, some of the participants that have shown the greatest reduction in self-reported problem gambling, have simply stopped that one specific problem activity, but continued to gamble on others without concern. Gamblers can be organised and controlled in one aspect, but actively acknowledge that they engage in other activities as a release, or ‘blow out’ as Participant 37 (Male, 31) puts it. Participant 53 (Male, 45) is a lifelong gambler, regularly betting on horse racing in a controlled and enjoyable manner. It was only when playing fixed odds betting terminals that they experienced problems, and the problems became quite severe. When referring to their different activities, Participant 53 (Male, 45) call the FOBT experiences ‘gambling’ as if this is a negative connotation of the word that is kept exclusively for problem behaviour.

**Fallacious beliefs** –This aspect covers all varieties of reference to illusion of control (Langer, 1975). If a participant makes reference to irrational expectations of probability, systems, winning streaks or luck attributed to illusory concepts, it is regarded as falling under the theme of fallacious beliefs. It can be seen from the results in Chapter Three that fallacious beliefs when used as a self-report measure, correlates positively with the PGSI score. It is included under the main theme of disorganised behaviour because gamblers will often refer to making gambling decisions based on one of these false beliefs over and above any rational belief, or the acceptance of randomness or chance.

**Participant 12 (Male, 19) session 2**

*“And with casino gambling, it’s it’s it’s hard sometimes to have a strategy for that without having to go into depth, like card counting and that sort of thing. I probably could learn that if I really put the effort into it, but you know, I’m not there.”*

*“Yeah if you use that system more often than not you would probably say your odds of winning were probably increased.”*

**Participant 12 (Male, 19) session 4**

*“I kind of wish that in certain instances I had maybe studied the form a bit better and it might have given us a better chance of winning, possibly.”*

**Participant 16 (Male, 21) session 1**

*“Er both really, ‘cause I’d say like er if I’ve had a win like say I’ve won something on the Saturday I’ll think oh my lucks in so I’ll place it again on the Sunday”*

**Participant 30 (Male, 74) session 3**

*“Well the only thing is I, I’ve had a bit of luck lately in the, I feel more relaxed when I, when, I, I go in now, I expect to win.”*

*“Yeah, I probably am in the last few months, yeah. I seem to have whatever knowledge I’ve gained, over the years, it seems to bearing the fruit at long last.”*

*“You see when you get to that sort of money behind you, it’s more like easy to win.”*

**Participant 37 (Male, 31) session 2**

*“And I’ve lost a bit over the last month, because basically I’m not as good at it and I haven’t researched it”*

**Participant 37 (Male, 31) session 3**

*“You have to put the leg work in if you want to win.”*

Almost all of the participants make reference to luck and some aspect of illusion of control during the course of their interviews. Often referring to complex systems or aspects of gambling that are enhanced by hard work, or knowledge of the sports or activities they bet on. When a big win occurs it is often claimed that that is due to combination of systematic thinking and a degree of luck, and likewise, failure to win is often ascribed to a lack of knowledge on that occasion, or some ability that will develop with more time and experience. Very few of the participants openly state that they understand the probabilities involved in the decisions they make. Occasionally a participant mentioned that all gambling was luck, but then contradicted this belief with statements regarding systems, or effort that would improve on past performance when adhered to correctly. More often than not gamblers, such as Participant 12 (Male, 19) and 37 above, refer to their lack of skill or knowledge being the main factor in any loss, rather than accepting that they were the victim of probability.

**Dissociation** - Gambling referenced as a source of dissociation or to achieve a buzz. Whenever a participant refers to euphoria, or loss of awareness of time or their surroundings this is regarded as dissociation. This is clearly moving away from rational decision-making when gambling; and being motivated by the state of mind achieved, rather than the winning of money or the application of systematic organised thinking. From a dual process approach this could be regarded as responding more to System One emotional aspects of behaviour.

#### **Participant 16 (Male, 21) session 1**

*"I think it's....I genuinely think when it comes down to it, it's just the like the feeling like, not so, well I suppose it is the bu... like the sort of buzz that you get from winning"*

*"generally is one of er just feel pleased er generally delighted with yourself like you sort of like brag about it in a way, especially when you're in a group of lads you're always have to brag about it when you've got an er big win or summit like that, it's just the thrill, it is generally just the thrill."*

#### **Participant 29 (Male, 19) session 1**

*"Er, don't like losing money, but it gives you a bit of a buzz sometimes. If you're having a good day and you go in and then you just like, I divn't na it just. Just feels good. Really good, you just feel like you can't lose. After you've won one, you feel like you can't lose. But then you do (laughs) "*

**Participant 30 (Male, 74) session 2**

*“They say there’s nothing like the feeling, the buzz you get when you win. You know you win, and you know you’ll keep on winning. “*

**Participant 30 (Male, 47) session 1**

*“I just like the buzz, of losing and winning (laughs)”*

**Participant 37 (Male, 31) session 3**

*“Or I get a real high from when I’ve won, or ...”*

**Participant 55 (Female, 37) session 2**

*“Yeah, you also get such a buzz when you win, it makes you feel invincible. Like there was one day when I won, and I kept going back into different bookies and about five times I won, and I didn’t learn. The last one I went in and I lost all of it. You think you’re invincible.”*

**Participant 30 (Male, 74) session 5**

*“Well, like I say, gambling to me it’s an outlet, some people drink, some people do drugs, you know whatever, it’s just an outlet for me, you’ve got to have one.”*

**Participant 37 (Male, 31) session 3**

*“And you go on them and you just forget yourself for fifteen minutes that you are on it, you’re just kind of totally zoned out, and I just think it’s really destructive”*

**Participant 53 (Male, 45) session 1**

*“I do get really angry, there’s a couple of things on there saying you don’t notice other people and you don’t sometimes whether you’re winning or losing, you go into a little bubble really. I do anyway. “*

Dissociation during gambling behaviours is common across all participants. There is strong relationship between dissociation and PGSI as found in Chapter Three. This is mirrored in the narratives of most of the participants. Loss of awareness of time, going into a ‘bubble’, and generally getting a buzz from wins was prevalent throughout all interviews. Several participants (29, 30 & 55) make reference to the feeling that they cannot lose, that they *know* they are going to win, as well as positive highs achieved through winning it was also common to describe heavy periods of negative mood after losses. What is interesting is that dissociation was also achieved by this negative state of mind as mentioned by Participant 56, and several



participants refer to achieving a ‘buzz’ from both winning and losing, not just winning. The dissociation achieved is also recognised by Participant 37 (Male, 31) as not necessarily a positive thing.

These two first main themes (external influence, disorganised behaviour) encompass an overall concept of engaging in gambling behaviour for reasons other than autonomous choice. External influences such as family, friends or the gambling environment created by institutions, and intuitive, habitual conditioned behaviours can be regarded as being influenced by System One, rather than more consciously thought out System Two type decision-making and behaviour (Wiers & Stacy, 2006). This corresponds closely with Brown’s (1986) and Oxford’s (2001) models of problem gambling which identify significant external relationships along with social and institutional determinants as key factors in the development and maintenance of problem gambling.

### 6.3.3 Main Theme 3: Conflict

Conflict is present where contradictions or conflicts between behaviour and self-reflection are present. For example, continually gambling, yet seeing it as destructive or creating negative mood. Participants often refer to positive and then negative affect, or good and bad outcomes, without any clear concept of how they view gambling. For many it is regarded as something they want to stop, and yet also referring to positive mood, or enjoying the dissociation created by continually engaging in gambling. When an individual struggles between the continued gambling behaviour with some suggestion that it is positive, whilst also revealing concerns, doubts or negative associations with gambling, there is conflict present. They might continue to gamble, but refer to it as something that puts them in a negative mood. They might struggle with whether or not they accept gambling as a harmless activity, or whether they see it as completely negative. When conflicts or paradoxes exist in an individual's narrative regarding gambling there seems to be a higher score on the PGSI scale. Often a reduction in PGSI score is accompanied by resolution of a conflict that was apparent in a previous session. Orford (2001; 2012) refers to conflict as a key factor in his excessive appetites model of general addiction and also emerging from contradictions between social moral attitudes towards gambling as an addiction, whilst simultaneously being portrayed as an acceptable recreational activity currently in the UK. The main theme of conflict is represented by several underlying sub themes, which include reference to 'disliking gambling', 'contradictions' and 'mistrust of gambling institutions' whilst still engaging in regular gambling activities.

**Dislike gambling** -Perhaps initially surprising, most of the participants took the opportunity to talk about their dislike of gambling and the way their gambling habits had a negative influence on their lives and those around them. Some of the more problematic gamblers had some particularly vehement attitudes toward the harm that gambling had brought into their lives.

**Participant 30 (Male, 74) session 2**

*“Erm, I don’t, I don’t like er National Hunt racing. I like, I prefer the flat, because National Hunt, sometimes see a horse injured and I don’t like to see that it, in fact if I watch a race and I see a horse injured, I walk out. It affects me that much. A horse trying to get up and it can’t. It really gets me, I... whereas on the flat you have a pretty good chance they won’t fall. So I prefer I don’t bet much on the jumps I don’t like them.”*

**Participant 34 (Male, 34) session 2**

*“Erm, the FOB machines are getting, I quite dislike them”*

**Participant 30 (Male, 47) session 2**

*“I hate it now [gambling]. I just hate losing. Cannot stand it. It does me head in.”*

**Participant 53 (Male, 23) session 2**

*“Erm, not any more I don’t think. Er, I complete, like my image of gambling now is completely negative, I just think like the whole thing you know like it’s just kind of, it’s just wasting money and wasting time and yeah, so I just see the whole thing as just quite a negative thing. I don’t think there’s anything in particular; I just think it has like a negative impact on everyday life.”*

**Participant 55 (Female, 37) session 1**

*“I’ve been on the other side of it as well, I worked at Ladbrokes, I just recently left, actually, so I’ve seen, I’ve been around it a lot. It was quite destructive. I think it was a very bad thing, there’s people like losing thousands, who’ve lost businesses, homes, everything and they’re putting all their wages in, I’ve seen them fix six seven times out to the cash point, back in, more in, just trying to win the money back. “*

**Participant 53 (Male, 45) session 1**

*“To be honest I hate it actually if I’m being truthful. I’m bitter, but I still do it. That’s the truth. I get really angry and upset but I still do it.”*

*“aye, I just feel like, you know like for example on Saturday I seen guys in there and I had like ten to one second, twenty to one second, and you just you make yourself, it’s as if you like making yourself feel like crap like basically, I don’t know what it’s all about really I don’t understand (laughs)”*

Quite a few of the gamblers make explicit reference to strong negative emotions when talking about gambling. Participant 30 (Male, 47) and 56 openly say they hate aspects of their gambling. Participant 53 (Male, 23) refers to his image of gambling as being completely negative. This also ties in with the next sub theme, which is contradiction.

**Contradiction** - Where a participant clearly contradicts one opinion or behaviour, by reporting an opposing view or behaviour. This is exemplified in some of the statements regarding dislike of gambling, because the participants often report strong negative opinions toward gambling behaviour and yet still engage in it.

**Participant 30 (Male, 74) session 3**

*“Dogs, well, I’ve come to the conclusion I don’t bet much on dogs, because I’ve decided it’s not a good bet, you see, you bet on dogs they’re all in the traps and the trap opens and they all fly to the first bend, and it’s usually trouble, so you don’t know which dog is going to lead and miss the trouble. So it’s a crazy bet, you shouldn’t really bet on dogs. I tend to cut me, I just take forecast doubles, which doesn’t cost much. Pick the same numbers going through the card and that’s it. Betting race to race on the dogs, complete waste of time really.”*

**Participant 34 (Male, 34) session 2**

*“I’ve stopped gambling, well I’ve still gambled on them but not as heavy. I’ve started putting less money in them no.”*

The statements above capture some of the ways in which the majority of participants can be seen to contradict themselves, often within one sentence. Such as Participant 34 (Male, 34), *“I’ve stopped gambling – well, I’ve still gambled...”* And Participant 30 (Male, 74) has decided that betting on dogs is a crazy bet and should be avoided, so they only take forecast doubles on dogs.

**Mistrust of gambling institutions** - Statements emerge from several participants that demonstrate an ideological or moral concern regarding gambling as an activity perpetuated by businesses solely for profit. This ties in with one of the sub themes from main theme One (External Influence). Any reference to dissatisfaction when dealing with gambling institutions, or the way gambling is portrayed or handled by those who control it is included here. Again it forms part of the main theme of contradiction due to the fact that all participants who make reference to this level of dissatisfaction are at the time still fully engaged in regular gambling behaviours.

**Participant 34 (Male, 34) session 1**

*“Well that’s the main reason why I’ve came, because you just never, you just never see anyone coming out with any money”*

**Participant 16 (Male, 21) session**

*“Er, not to bet, not er to bet online er with online games and things like that ‘cause and now I’ve learned not to bet on slot machines at the casino ‘cause of all the scams “*

**Participant 30 (Male, 74) session 1**

*“Well I dislike the bookmakers cutting the odds the way they are, you know you used to get reasonable prices once, now it’s getting ridiculous, the way they’re cutting everything. I don’t like that. “*

**Participant 30 (Male, 74) session 6**

*“Yeah, well yeah, it’s been. I think they’ve got sort of saturation betting, they’ve got too much in one day. As soon as you walk in the door, they want your money. There’s a couple of races from South Africa, Australia, even from dog racing on from Australia in the mornings, they’re just filling in time till the actual British racing starts, so you got no chance of not having a bet, if you’re sat in a betting, and something comes up, you bet on something you’re not normally, it’s saturation. I’m not interested in Australian, South African, you know, all this. They sometimes have a game where it’s motor racing, and you bet on a number, it’s just, you’re not interested. Most of them change. It’s just saturation. And I think it’s totally wrong. They just want your money off you. “*

**Participant 34 (Male, 34) session 1**

*“Like I say I got a job in a betting shop once and I worked out the percentage on the week, well we had to work out the percentage on the week on how much the shop actually took on the betting terminals, and they’re only meant to be taking two percent a machine and they’re churning in forty to sixty percent profit a week, and you think they’re supposed to have two percent per machine, there’s only three machines, that’s way above the percentage what it should be taking you know.”*

**Participant 34 (Male, 34) session 2**

*“It’s made us think Jesus Christ is it making Ladbrokes alone is making two hundred and fifty eight million pound a year off them. That’s just one firm. And they make even more than what they are on horse racing, dogs football everything else. It’s just made us think Jesus Christ these things really, should be trying to avoid them if I can.”*

*“it’s like I find it stupid you can ban yourself from a a betting shop, and all the betting shops if you want, but you cannot ban yourself just from the FOB machine. Well, there’s nothing in process there to stop you doing something like that. It’s an easy thing.”*

**Participant 37 (Male, 31) session 2**

*“They can do, yeah I mean there’s been some pretty strange horse results this week. There was one this week that was about to win and erm, and then went off on the wrong course, and then the horse that came in second because it was going to finish second, the jockey started to pull it up, oh it’s not going to win oh I’ll pull it up. And then something came in at a massive price, and it’s been a quite a strange week really with some really big winners. And when it happens and you’re at the receiving end of that it can sort of demoralise you. So yeah.”*

**Participant 37 (Male, 31) session 3**

*“I mean I put my first money in a slot machine when I was a kid, probably at like, I don’t know a holiday camp or something, and I wouldn’t have bet at university which would have been ten, thirteen years ago, and I know money goes up with inflation., but I remember sticking twenty p in per time I pressed that button, to make the wheels go round or whatever, but everything has just been massively escalated now. I mean what they did is put the jackpots up, but it also meant all the stakes went up, and they put notes, things for notes, which would have been unheard of five or ten years ago.”*

*“and I think in another ten years it’s going to be a really big problem in this country, because you can’t put adverts on now without play bingo on your mobile, or play, you know the idea, of playing casino on your mobile to me that defeats the point of going to a casino.”*

*“well no there isn’t, there’s even the money to give you a little bit, you might be one of the lucky ones, and I think people who defend, like the gambling industry to defend those machines, they would say well people have the free choice you know, how much to put in. Erm, you know they could say, you could go and stick a hundred pound on every horse race and that, but I think it’s such a for me, that’s so psychologically different. To put a hundred pound on I don’t know, ##### compared to doing that.”*

**Participant 55 (Female, 37) session 1**

*“I know the environment is like, especially with the machines being so popular now it’s a lot of people you know, who can’t take losing, like a lot of negativity and it’s sometimes not a nice environment to be in, people hitting the machine and sort of swearing to themselves.”*

What is interesting to see is that for many of the gamblers, there is an awareness of the wider context of gambling. They are often concerned about the lack of controls in place to protect gamblers, or the emphasis on profit over care by gambling institutions. Many of these gamblers have experienced high levels of problem gambling and they acknowledge that the environment, both physical and conceptually is something that they often battle with when trying to control their gambling behaviour.

#### **6.3.4 Main theme 4: Self-identity and narrative**

An important part of understanding gambling behaviour and making use of a qualitative approach is to allow the gamblers to explain their own behaviours in their own words. In doing so they offer a view into how they construct a sense of self. Examining the way gamblers talk about their behaviour over a period of time allows deeper understanding of how they position themselves as a gambler, in a gamblers world. Included here are references to self-reflection, attitude and mood associated with gambling and the way the individual presents themselves as a gambler. It is also interesting to see how the gamblers position themselves amongst other gamblers and with previous incarnations of themselves as gamblers, either becoming 'worse', or 'better' if they incur changes.

##### **Participant 27 (Male, 20) session 1**

*"Other people, I think, probably quite low compared to other people I know. But some people don't gamble do they so it's quite high compared to them. "*

##### **Participant 34 (Male, 34) session 2**

*"It's just made us think Jesus Christ these things really, should be trying to avoid them if I can. "*

##### **Participant 37 (Male, 31) session 3**

*"Erm, probably enjoy it more actually. Erm, well if you do, I mean obviously it's not an, it's not an er science per se but if you bet on something and you make an error and then you look back and you think why did I do that, that was a stupid bet, erm. Because it's only, the stakes smaller then it's it's it's, it's easier to bear really. So erm. So yeah it's probably more enjoyable in a way. "*

*"Overall when I was spending far too much than I could afford to lose, you know five or six years ago, that definitely did. Erm, so, yeah, so like, I've got a mixture of debts, some of it's gambling, but some of it's other things as well. Renting the house and stuff, but I've definitely thousands of pounds down, a decade or whatever, because I've gambled. You sometimes you think, you know if I had that ten grand in my bank now, do you know what I mean. I know people aren't necessarily that thrifty, they'd spend it on something else. So erm, that sort of stuff, you know, that does have an effect. So I am really conscious of trying to break down and its types, types of gambling and things. "*

**Participant 53 (Male, 23) session 2**

*“Yeah I’m being quite .... yeah I mean like I suppose I’m being quite purposefully trying to come away from it, because I do feel like I hit rock bottom. Like last month, so I thought right I’m coming away from it as much as I can.”*

**Participant 53 (Male, 45) session 1**

*“But I think if you won all the time it would be boring. And if you lost it would. Even though you lose most of the time I think, if you lost all of the time, but I know overall you do lose, but the little wins...”*

**Participant 53 (Male, 45) session 2**

*“But the plus side to that has it’s made us a little bit little bit more calmer, you know, not as agitated about things that just little things agitate you like you know when you’re tired, gambling does that, you can just get annoyed at daft things really you know, irrelevant.”*

**Positive self-narrative** is reference to good mood associated with gambling, positive reference to gambling enjoyment. I.e. whenever things are good or getting better. Most of the references that can be interpreted as a positive self-narrative involve movement towards more controlled or minimising gambling behaviour. However, for some participants the positive aspect is more to do with feeling better about their gambling behaviour, either because they feel lucky or because they have been winning more. There is for some simply an acceptance that their gambling behaviour is not causing too much harm, and is therefore acceptable in the context of past gambling behaviour or in relation to others. Positive self-narrative is more typical during lower stages of PGSI.

**Participant 30 (Male, 74) session 1**

*“Er, I’m quite comfortable with it at the moment. I bet within me means. If I put a bet on I’m happy with it, whether it wins or loses, I’ve done what I want to do, you know I haven’t made a big mistake. So I’m quite comfortable with that even if I’ve lost. “*

**Participant 16 (Male, 21) session 2**

*“It’s just like, no I can’t see myself ever not gambling. Unless I get serious, but like er”*



**Participant 27 (Male, 20) session 2**

*"I'm fine with it. It's not really stopping me doing anything it's not really taking any money off me."*

**Participant 55 (Female, 37) session 2**

*"It's been really lately because, I knew I had a problem, and I tried to, to stop, but I was still sort of doing it and not helping myself. Whereas now I realise I have to stop all together there's no, I can't sort of do it and control it, so until that's gone, I just need to not do it. "*

**Negative Self-Narrative** also occurs throughout many of the interviews. Largely it occurs during the higher stages of self-reported PGSI. It includes reference to negative affect, being addicted, being lonely, depressed, self-destructive or just realising there is a problem. There is also the realisation that there is a problem, and statements that allude to an acknowledgement that the gambling behaviour may be out of control or a change is needed.

**Participant 7 (Male, 19) session 2**

*"Oh, it like, oh, erm, I got two hundred out and I gamble. And I only got fifty left and I gambled back to about a hundred and fifty, and said oh should I just go now, 'cause I only lost fifty. So and then go to the toilet come back out and said oh I'll just gamble away, just stay, just stay. And I lost all my hundred and fifty then I go back to home without not even one penny in my pocket and I started winging that oh I should have left then and oh so stupid. Yeah, lost two hundred that night."*

**Participant 30 (Male, 74) session 2**

*"Oh, well I know it's part of the game but I, I don't like it, well, I start thinking you shouldn't have had a bet in the first place, and sometimes you think you're betting in races where you don't really fancy anything."*

**Participant 30 (Male, 47) session 2**

*"Oh I feel, absolutely, the amount of money I've lost is unbelievable. Ha ha"*

**Participant 37 (Male, 31) session 1**

*"Erm, it would depend on the extent of the loss, and again what it was on. So if I've gone out and come back and I've lost two hundred pound in a casino, erm, I won't necessarily feel that bad at the time actually, but like erm, days later I'll feel pretty bad, 'cause thinking well what else could I have done with that money. "*

**Participant 37 (Male, 31) session 3**

*“Erm, I think I remember the losses more than the wins.”*

*“But it’s definitely overall there are things I regret about it,”*

*“Well it’s the main time I get a craving to go on it I think of all the money I’ve lost,”*

*“Erm, yeah, I think, I think it’s when you grow older it’s the money really. Erm, it could have been used better. “*

**Participant 53 (Male, 23) session 1**

*“But like sometimes I can’t afford to lose it and I do lose it. And then I think that’s the one that really gets to us.”*

**Participant 55 (Female, 37) session 1**

*“Yeah, ‘cause if I’d gone any further it would have been like losing me flat that I’d worked hard for and everything. It’s pretty shameful actually.”*

*“Oh, horrendous I’d like, I don’t even like want to go in a bookies anymore, which is sad, ‘cause I’ve always enjoyed the social aspect of it, but I’ve sort of got myself in so much mess, it’s going to take so many years to get back out of, when I’ve always worked really hard and refused to borrow of people and you’re in a vicious circle but just got in a big mess. Because of it.”*

*“It’s goo... it’s sort of frustrating the time in between though, because it’s going to take so many months, and it makes us want to gamble to get the, I won’t, but it makes us want to gamble ‘cause I’m constantly short now, because of what I’ve done. “*

**Participant 7 (Male, 19) session 2**

*“Erm, spend too much. Yeah, just realised I spend too much on it. And lost too much”*

**Participant 16 (Male, 21) session 2**

*“Er, I think that was in January sometime. Got to the point where, where, we’d been paid, all been paid from work like when work went out, er, we’d gone out had a good night and decided to go the casino then I’d lost all me pay from that month when I had things to pay for and I just thought like I can’t keep doing this to myself so,..had to quit.”*

**Participant 29 (Male, 19) session 1**

*“I had, a few months ago now, probably about a year ago I just I didn’t stick to me limits at all, I probably spent about fifty sixty quid and just since then it made us realise opened me eyes a bit “*

**Participant 34 (Male, 34) session 1**

*"If you lose five hundred pound in one day that's when you start to think to yourself oh bollocks, you know what I mean. I shouldn't of went over the top the day you know."*

**Participant 16 (Male, 21) session 1**

*"Er, I think that was in January sometime. Got to the point where, where, we'd been paid, all been paid from work like when work went out, er, we'd gone out had a good night and decided to go the casino then I'd lost all me pay from that month when I had things to pay for and I just thought like I can't keep doing this to myself so had to quit."*

**Participant 29 (Male, 19) session 1**

*"Yeah, I mean up until then I probably didn't realise but I was getting quite bad I'd gotten a bit caught up in it like you say and then that time I just thought, whoa, no more I can't afford to do that."*

**Participant 53 (Male, 23) session 2**

*"Erm, obviously it's gutting to lose that much, kind of money, and it was only like last month, when I did a to a point when there was one bill coming out and I was like shit, I haven't got enough in the bank to cover it, and so I had to borrow some money off a friend to like cover it and it was like, that was kind of like the rock bottom, when I kind of realised that I was, I can't be in that situation. "*

*"It's kind of like that vicious circle. I might feel down about myself, with not being able to train or anything and I'll gamble, do you know what I mean, and it just goes down again, and you never get, never can see an end sometimes until you hit rock bottom. Which for me like lending money off someone was quite a big thing, I've never like, I've always been quite independent about being quite proud, so it was quite a big thing, that's when I thought to myself that's like that's the rock bottom, I can't really keep doing this. "*

**Participant 53 (Male, 23) session 3**

*"I guess it's just like if I'm on the computer, that's just the biggest problem, like if I'm on the computer, that's the biggest problem like if I'm on the computer and I'm just like doing some work, and just take a little break. I'm like that; oh I'll go and have a little flutter. Or something like that. And just takes up time and money and just kind of that circle. But over the months, I mean this year's been when I've realised it more. And I think it's been doing this study, I've kind of realised just how bad it is, and I think, when you interviewed us last time, I was saying that I've stopped. I'd stopped some websites, and I'd cancelled my accounts. And I was like right, I've stopped me from getting on them. Then all I do, there's obviously more websites out there. So if I can't get on my website, I find a new one and find a new one. And I have to set limits, and there's only like there's only one website now, that I just went on two days ago, where everything was blocked off, and I said, right I'm not going to go on there. And then it's because a friend of mine said why don't you play poker instead, because you just pay one bit of money and then the game lasts for hours, so you're not losing loads of money. So I was like mint, so I just put a tenner in. And then while I was waiting for the poker table I noticed that the*

*machine had like slots on it, and I'm like shit, and then a hundred quid later you're like right I'm going to have to stop now. "*

**Participant 37 (Male, 31) session 3**

*"Overall when I was spending far too much than I could afford to lose, you know five or six years ago, that definitely did. Erm, so, yeah, so like, I've got a mixture of debts, some of its gambling, but some of its other things as well. Renting the house and stuff, but I've definitely thousands of pounds down, a decade or whatever, because I've gambled. You sometimes you think, you know if I had that ten grand in my bank now, do you know what I mean. I know people aren't necessarily that thrifty, they'd spend it on something else. So erm, that sort of stuff, you know, that does have an effect. So I am really conscious of trying to break down and it's types, types of gambling and things. "*

*"Erm, yeah, I think, I think it's when you grow older it's the money really. Erm, it could have been used better. I think because it's erm, if you say you go on a fruit machine, you lose thirty quid, but it's not the end of the world, it's not that bad, but if you're doing it three times a week then it is. But because it's done in like little kind of increments, you don't realise how it's crept on. Say you don't, you know, say on a horse say I lose five hundred pounds a year, or whatever, I still wouldn't save up and put a five hundred pound bet on, which is effectively the same thing isn't it in many ways, in terms of the money. "*

**Participant 53 (Male, 23) session 2**

*"You know that it's just kind of feeding money in. And there's that like, the more you gamble, I suppose the more you kind of realise that. But you're right you continue to go on that road. You kind of know that you don't win it back. You always just kind of spend it, maybe win a little bit, and you'll spend that to try and win a little more and just like hopping along. So the money's the biggest thing on my mind. "*

**Participant 55 (Female, 37) session 2**

*"It's been really lately because, I knew I had a problem, and I tried to, to stop, but I was still sort of doing it and not helping myself. Whereas now I realise I have to stop all together there's no, I can't sort of do it and control it, so until that's gone, I just need to not do it."*

**Participant 37 (Male, 31) session 1**

*"But the sort of the other side of it would be would have, would have a more down side there's more destructive, 'cause you're kind of doing it knowing that I'm not going to come home with more in my pocket than I went out with"*

**Participant 37 (Male, 31) session 3**

*"And you go on them and you just forget yourself for fifteen minutes that you are on it, you're just kind of totally zoned out, and I just think it's really destructive,"*

**Participant 37 (Male, 31) session 1**

*“Obviously like losing’s like the feelings..ho..awful..especially from a big loss as well”*

**Participant 16 (Male, 21) session 2**

*“Yeah, definitely. Like, if you’ve had like a big loss like, like especially the other night after the casino, I didn’t want to talk to anyone. And I had to go home to me mam and dad rambling on round the dinner table, and you just think, oh, (pause) like such a waste last night was type thing but er, yeah, it’s normally negative, obviously you get like the high points, when you win and you think, oh, I’ll go spend this money, money type thing, but I don’t think, don’t quite think they er, match up to the er, low points to be honest. “*

**Participant 30 (Male, 47) session 1**

*“Ah, there’s nowt worse when you lose your money. Can’t have a pint (laughs) there’s nowt worse. Does your head in “*

**Participant 53 (Male, 45) session 1**

*“To be honest I hate it actually if I’m being truthful. I’m bitter, but I still do it. That’s the truth. I get really angry and upset but I still do it.*

*aye, I just feel like, you know like for example on Saturday I seen guys in there and I had like ten to one second, twenty to one second, and you just you make yourself, it’s as if you like making yourself feel like crap like basically, I don’t know what it’s all about really I don’t understand (laughs)”*

Throughout the interviews there are comments or statements that position the individual in comparison with others, how they view themselves in the gambling arena, and why they explicitly claim to gamble. This includes identifying others as problem gamblers, but not themselves. Claiming that they are not really gamblers, either due to the frequency of gambling, type of activities they engage in, or amounts of money they spend. Claiming to gamble to add interest to sport, or because they do not drink or go out socially and therefore they are a gambler because they do not engage in other comparable recreation activities.

There are a variety of positions that the participants take throughout their interviews. One is acknowledging that they are in fact a problem gambler.

**Participant 12 (Male, 19) session 2**

*“Erm, I probably as I say out of the people in, people that are in my flat, I would say that I gamble the most,”*

**Participant 53 (Male, 23) session 2**

*“And it it’s kind of peaked a little bit, erm, to a point where I think it was like six weeks ago I was on the phone to er, gambling anonymous, or whatever it was. Like one of the gambling help lines. “*

**Participant 55 (Female, 37) session 1**

*“I was getting in trouble to be honest; it was getting out of hand.”*

**Participant 55 (Female, 37) session 2**

*“Yeah. I think I just realised I was being physically working to fund a gambling habit and that was just had to stop.”*

However, at other times the participants position themselves in comparison to others who they believe have greater problems. Using this comparison to present themselves as moderate gamblers, however these twelve participants’ have been selected as being some of the highest level problem gamblers from the main sample, so their self-image of being average or moderate gamblers is arguably inaccurate.

**Participant 12 (Male, 19) session 4**

*“I think it’s phww, I’m not sure about that one to be honest, it’s erm, I think, other, I know other people, do spend a lot more, online than, but then, then again, I know people who bet less than me that don’t really bet that much. I’d say I’m probably on average I’d say I’m just just below average at the moment”*

**Participant 30 (Male, 74) session 6**

*“No, no. I don’t put a lot of money on any horse, some guys put, I know a guy who puts hundreds on, on one horse.”*

**Participant 30 (Male, 47) session 1**

*“I would say it’s like a middle, middle-ish. I haven’t got loads of money to spend on gambling, you know what I mean so, “*

**Participant 27 (Male, 20) session 3**

*“I think it’s low. Quite a lot of my friends spend a lot more on it.”*

**Participant 29 (Male, 19) session 1**

*“Compared to some you see, really low. Some just stay in there all day”*

**Participant 12 (Male, 19) session 4**

*“I know other people, do spend a lot more, online”*

**Participant 16 (Male, 21) session 2**

*“Er, probably low compared to other gamblers to be honest, “*

**Participant 27 (Male, 20) session 3**

*“I think they think the same really, just yeah, I’m not like the worst out of a bad lot of people”*

**Participant 29 (Male, 19) session 1**

*“Compared to some you see, really low. Some just stay in there all day”*

**Participant 30 (Male, 74) session 1**

*“I know a couple of people who bet heavy.”*

**Participant 30 (Male, 47) session 1**

*“Oh the never say nowt, they’re just the same as me basically (laughs) aye some of them gamble a lot more than I do, aye.”*

**Participant 55 (Female, 37) session 1**

*“I’ve been on the other side of it as well, I worked at Ladbrokes, I just recently left, actually, so I’ve seen, I’ve been around it a lot. It was quite destructive. I think it was a very bad thing, there’s people like losing thousands, who’ve lost businesses homes, everything and they’re putting all their wages in, I’ve seen them fix six seven times out to the cash point, back in, more in, just trying to win the money back.”*

**Participant 30 (Male, 74) session 1**

*“Well, I’ve always thought, in a way I’m not a gambler. Because I’m fiddling about, instead of really having a go, you’ve got to have confidence to do that, I, I couldn’t put fifty pound on a horse.”*

*“That’s why I say I’m not really a gambler.”*

**Participant 53 (Male, 23) session 2**

*“the main, one, well I put the national lottery on, but I never see that as er, I never see that as a gambling thing, because I have a direct debit coming out, it’s like ten pounds a month or something, and it just keeps a line on the draws each week. Erm, and I never really like, I’ve never seen that as an issues, and I suppose that’s more accepted,”*

At the more extreme end of the spectrum, some of the participants claim that their behaviour is not really 'gambling'. Quite often the National Lottery is not viewed as gambling, and this was common throughout all interviews even amongst the larger sample. Participant 30, who attended interview sessions for over a year, often referred to his self-view that he was not really a gambler, due to the small stakes and lack of risk he took. However, he exemplified the daily habitual disorganised gambler, gambling most days, several times a day on a variety of activities. This aspect of self-identity plays an important part in whether the gambler is content with their levels of gambling behaviour and whether they have any conflicts between their own behaviour and those that they observe around them.



### **6.3.5 Main theme 5: Organised behaviour**

In opposition to one of the earlier themes (disorganised behaviour) the theme of organised behaviour tends to emerge during the lower scoring PGSI stages. There are references to clear limits, logic and rules applied to gambling decisions, with fewer gambling activities favoured for clear reasons. For example, more knowledge of the activity, such as football or horse racing, or because of the odds and potential winnings. Even where illusion of control or false beliefs are present, there is a personal explanation which involves some degree of conscious, thought out decision-making. Decisions are stable, consistent and considered, with clear expectations and reasons behind decisions, even if simply for recreational relief. There is often a lack of reference to external influencing factors, with mostly internal autonomous, independent decision-making. With a clear reference to control and stating that they have a rational approach to their gambling decisions, whether or not this is actually the case in practice.

One of the aspects of organised behaviour is reference to increased levels of control over gambling behaviour.

#### **Participant 12 (Male, 19) session 4**

*“Yeah I think it’s, I don’t think it’s particularly a problem or anything like that, I think it’s sort of yeah, it’s pretty much in check I think”.*

#### **Participant 16 (Male, 21) session 2**

*“er yeah, I’ve er, I’ve banned myself from the casino”.*

#### **Participant 29 (Male, 19) session 2**

*“Erm, like last time I’d say I’m only going to spend a tenner or I’m only going to spend twenty quid. Then I’d find myself like, you end up spending more and then you just think oh Jesus. But now it’s like if I take twenty quid with the intention of spending that and if I’ve got more money in my wallet I won’t dip into that it’s just that much and then walk out.”*

*“erm, it’s alright. Like controlled, like you say. I mean I don’t go stupid or anything daft like that it’s just a bit of, bit of fun really.”*

**Participant 30 (Male, 74) session 1**

*"But it. It's a temptation when you're sitting there, that's why in way I don't like the, I don't sit in the betting shop all day."*

*"That's why I don't like to be put in temptation, so I write a couple of bets out and I'll go out somewhere. Walk round, or a coffee or whatever, you know"*

*"I've acquired a bit of discipline on the betting. "*

**Participant 34 (Male, 34) session 1**

*"Betting exchanges, casinos, obviously I've worked in a casino, erm I actually got a job in a casino to stop us gambling in them, 'cause you weren't allowed to gamble in any other casino's at the time. So I actually got meself into a casino to stop gambling 'cause I found it easier that way."*

**Participant 30 (Male, 47) session 2**

*"Oh, I've stopped going to the bookies. Aye aye. Just put me bet on, that's it, I'm out the door. I don't go to the Bigg Market anymore. So. Spending too much, it cost a fortune."*

*"Oh they keep trying to text us, are you coming to the betting shop, I just text back, no."*

**Participant 37 (Male, 31) session 1**

*"Hopefully when I come back I won't have betted at all in the casino or betted on like I say a fruit machine or quiz machine"*

Some of the interesting aspects of control that are mentioned by the participants involve systems of control that involve taking themselves out of the gambling environment. This is done in a variety of ways, sometimes by actively banning themselves from web sites or casinos, at other times by actually working in gambling establishments in order to be prevented from gambling.

**Participant 37 (Male, 31) session 3**

*"I'm just trying to bring that sort of side in a bit more. Because normally say I have six races for me that suit that I'd have a bet on, I'd probably bet on all those six. I might be well up or down after those, but now I say, what I'm trying to do now is say, if I'm up after three I just stop"*

**Participant 53 (Male, 23) session 1**

*“And I have some of my accounts online that I’ve kind of limited them myself so I can’t physically put more money in if I wanted to”*

*“and what I’ve been doing to try and come off it, is like I said I’ve put a restriction on a lot of my accounts and then some on line gambling sites have practice play so it’s not really about the money, it’s just about the game and playing it. So I’ll just practice with fake money, which is, good.”*

*“feel positive, because erm, I always think if this charity hadn’t come into place and I wasn’t so busy all the time, like erm, I just think it would be a negative thing, and when I’m working all the time, I think about things to use my money for instead of gambling you know. So I start seeing other things and think oh yeah, great. And I just kind of, just feels better. Not doing it.”*

**Participant 55 (Female, 37) session 1**

*“When I realise it’s destructive or whatever, I can stop. Just as easy”*

**Participant 30 (Male, 74) session 1**

*“Oh yeah I look for certain things. Certain jockeys when they ride for certain trainers, and another thing I look at is, I don’t just pick a name out ‘cause I look, I like, I like to think that there’s some thought going in to it. Er, I look at course and distance. Listed in the paper. Even if a horse hasn’t been there for three years, come back in it works”*

**Participant 34 (Male, 34) session 2**

*“yeah, the day before I’ve started doing like following like horse trainers who have won over the last week, and keeping records myself, so I can follow the stats and see how many winners they’ve sent out in a certain week. I’ve started that on a data base on my computer now. “*

*“Quite a large data base to follow, and you’re using about seven or eight different websites to get all my information. That I write up, ‘cause to get my percentages out for runners. I work out say, one trainer say Luka Marney say, how many first time winners he has out with two year olds, and how many he has with three year olds, and four year olds and so on, to see if he’s got a decent strike rate, because some trainers might just never have a first time out winner, so I would just be throwing my money away. So if I look into it. A bit more than what I used to, it’s better than throwing a couple of quid away on a no hoper. We could be even money just cause of the stable.”*

Organised behaviour includes accounts by the gamblers to make conscious decisions regarding their gambling behaviour. There is less emphasis on regret over impulsive decisions and more suggestions that they are aware of their limits, and have systems in place either cognitive or behavioural that enable more measured gambling.

**Participant 27 (Male, 20) session 3**

*“Then realise they were all winning or losing randomly and then I just thought, nah. I stopped then.”*

**Participant 34 (Male, 34) session 1**

*“You’ve got to cover everything. I’ve seen people with rubbing prunes, and they’ve got their little four leaf clover in their hand and you think to yourself, god man, it’s not gonna make a difference to what that animal does there, it’s whether it’s fit and healthy.”*

There is progression during organised behaviour that appears to stem from the first cognitive re-evaluation of gambling behaviour. This is then put into practice by using systems of control to enable the behaviour to match the intention. This follows key aspects of both Orford’s view of re-evaluation and also aspect of the transtheoretical model’s processes of change. The gamblers notice or become aware of a change in attitude and this progresses into the practice of more concrete behavioural changes around their gambling behaviour.

### **6.3.6 Main theme 6: Change**

This theme encompasses any reference to changes toward or away from gambling. Conscious reference to either making or acknowledging changes in behaviour, either by choice or brought on by external factors. This includes such things as gambling less, controlling gambling, or stopping a particular behaviour. This conscious reference to acknowledging change demonstrates that the individuals believe change can and has occurred during their time gambling. Sub themes distinguished here include change as a self-disclosure, specifically gambling less, stating that they get more enjoyment from less gambling, and changing views on gambling which represent a clear change of attitude and moving to a point where the individual states they will not return to gambling as they once did.

#### **Participant 27 (Male, 20) session 1**

*"I never bet on colours anymore, 'cause I lost a lot of money on colours once. So now I never do that. Other than that no. "*

#### **Participant 30 (Male, 74) session 2**

*"And I've started to increase stakes, where I would put fifty p on a horse, I'll put a pound on now, or maybe more."*

#### **Participant 30 (Male, 74) session 3**

*"I'm increasing me stake now, partly because I'm winning,"*

#### **Participant 37 (Male, 31) session 3**

*"Probably averaging a little bit less, because erm, don't go out too much now. So I wouldn't be likely to use a quiz machine or have a go on a fruit machine. So I don't spend anything on that, er erm, and my stake now that I put on the on the horses is er, is lower. Now. When I bet."*

*"I'm just trying to bring that sort of side in a bit more. Because normally say I have six races for me that suit that I'd have a bet on, I'd probably bet on all those six. I might be well up or down after those, but now I say, what I'm trying to do now is say, if I'm up after three I just stop. "*

#### **Participant 53 (Male, 23) session 1**

*"I think if I'm busier I won't think about that kind of stuff, and I'll start making more money, and I won't think about this kind of stuff. Yeah hopefully, hopefully there'll be quite a lot of changes. And I'd like to come off it, quite a bit."*

As can be seen from the above statements, it is common for the participants to comment on changes in their gambling behaviour. This is as should be expected as the participants selected here are those that demonstrate the greatest degree of change on their PGSI scores. This is an important aspect of the understanding of self-reported change in gamblers. As found in Chapter Four the measures that predicted problem gambling do not predict change; however as can be seen here, there are clear reference to change amongst the narratives of the same gamblers. This will be discussed further in Chapter Seven, but appears to correspond with Orford's belief that a conscious desire or acknowledgement of change typically occurs prior to any underlying absolute behaviour change.

The wider context of change can be seen across several dimensions. One is the change of opinion regarding gambling behaviour, which is a cognitive change of attitude toward previous gambling behaviours. The majority of participants make statements regarding a re-evaluation of past behaviour, and a change of values regarding how they spend their time and money.

#### **Participant 7 (Male, 19) session 2**

*"Erm, spend too much. Yeah, just realised I spend too much on it. And lost too much"*

#### **Participant 16 (Male, 21) session 2**

*"Er yeah, I've er, I've banned myself from the casino. Er, I think that was in January sometime. Got to the point where, where, we'd been paid, all been paid from work like when work went out, er, we'd gone out had a good night and decided to go the casino then I'd lost all me pay from that month when I had things to pay for and I just thought like I can't keep doing this to myself so,. Had to quit."*

*"yeah in er, think it was Decemb... no it would have been January's rent I had to pay, it comes out the start of the month and er, like I'd spent all me Christmas money on new stuff but like, and er, I was like a hundred pound down, which I shouldn't have gone into my rent type thing, so er, 'cause I'd wasted that on gambling which I when I shouldn't of, so I had to, like er, ring my estate agents to try and delay my rent coming out. Which is a bit of a er, carry on, and I just thought I can't keep going into my rent when, that's all, I need to live first before I gamble to be honest "*

*“er, it’s not really a limit, really, it’s just like a er, there’s just a part when you’re actually gambling and you just think, right if you’re losing so much and you just think oh I’ve just got to get out of here while I’ve got some money left type of thing.”*

*“yeah, definitely. Like, if you’ve had like a big loss like, like especially the other night after the casino, I didn’t want to talk to anyone. And I had to go home to me mam and dad rambling on round the dinner table, and you just think, oh, (pause) like such a waste last night was type thing but er, yeah, it’s normally negative, obviously you get like the high points, when you win and you think, oh, I’ll go spend this money, money type thing, but I don’t think, don’t quite think they er, match up to the er, low points to be honest. “*

**Participant 29 (Male, 19) session 2**

*“Erm, wey it’s just sometimes when you go into the bookies or something, you just look about and think, what am I doing here? (laughs) know what I mean, but erm, not really apart from that, sometimes you just think like I shouldn’t be here, or just , just want to get out, go out or something like that “*

*“Like sometimes just fancy a bit of a bet and then other days you don’t want anything to do with it really “*

*“Just, I just think like it’s pointless really. It’s just like you go in and you just lose money. I mean, let’s face it, there’s not many rich erm, gamblers is there really? ‘Cause everyone just loses in the end. So it’s just I suppose it’s facing the facts really. I’ve started like opening my eyes a little bit and then realised “*

**Participant 30 (Male, 74) session 4**

*“Well, yeah. I’m trying to er, got a different approach now. Recently, er, I try to, I look at the paper and I look at certain races if there’s four five six runners, I don’t even look at them. So what I do is, the time they’re due on, I go and deliberately go and have a coffee, so it gets me away from the betting shop for those races, plus it gets me away from the machines. So sometimes while you’re there, you’re oh I’m not having a bet on this horse race I’ll have a bet... you see. You’ve got to start thinking that way.”*

**Participant 34 (Male, 34) session 2**

*“It’s made us think Jesus Christ is it making Ladbrokes alone is making two hundred and fifty eight million pound a year off them. That’s just one firm. And they make even more than what they are on horse racing, dogs football everything else. It’s just made us think Jesus Christ these things really, should be trying to avoid them if I can. “*

**Participant 30 (Male, 47) session 2**

*“Oh, just like I said, it’s just like I’m going to see her, trying to get a relationship with her. Buying her stuff, buying the kid’s stuff, so..it’s just, see it differently aye. “*

*“Oh, I’ve stopped going to the bookies. Aye aye. Just put me bet on, that’s it, I’m out the door. I don’t go to the Bigg Market anymore. S. Spending too much, it cost a fortune.”*

*"I wouldn't go and gamble on the horses, gamble on the machines. No chance."*

**Participant 37 (Male, 31) session 2**

*"Because I had quite a bit in my account at one point and I took some of the money out, and then some of it drained away, just as it does. And I just decided to go back to smaller stakes, while I think about more what I'm doing, a bit more with it as well. 'Cause whether I bet two or three pounds or four pounds, it doesn't I don't get an extra buzz from betting the double amount necessarily."*

*"Erm, probably enjoy it more actually. Erm, well if you do, I mean obviously it's not an, it's not an er science per se but if you bet on something and you make an error and then you look back and you think why did I do that, that was a stupid bet, erm. Because it's only, the stakes smaller then it's it's it's, it's easier to bear really."*

**Participant 53 (Male, 23) session 2**

*"Erm, not any more I don't think. Er, I complete, like my image of gambling now is completely negative, I just think like the whole thing you know like it's just kind of, it's just wasting money and wasting time and yeah, so I just see the whole thing as just quite a negative thing. I don't think there's anything in particular; I just think it has like a negative impact on everyday life. "*

**Participant 55 (Female, 37) session 2**

*"Yeah, would never have gone in like you've said, and just said, right I'm doing this for the afternoon, this is my day out, if I lose forty pound I lose it. I was always doing it to win."*

**Participant 53 (Male, 45) session 2**

*"Little bit yeah. Yeah, I suppose. But then I did have a bet today, but you know just, you know, sometimes I think, you, you enjoy it a bit more, but it's like anything, if you're doing it all the time. I suppose, but er, I dunno but, if I had the, if I had the money I probably would, I'm not gonna lie. But you can do without it, you know?"*

In addition to attitudinal changes, another aspect of change that is identified in the narratives is actual behavioural change, where participants consciously recognise that they have altered their gambling behaviour in some way. In the sense of narratives being one of three possible directions; incremental – getting better; decremental – getting worse; or stable – unchanging (Wetherell, Taylor & Yates, 2001), it might be expected that during these changeable periods the gamblers self-narratives would include utterances about movement in evaluative space.



**Participant 16 (Male, 21) session 2**

*“Erm, just reducing my stakes down because I was betting like ten pound on like a first goal scorer or something like that so. They’ve gone down to like fiver, which doesn’t seem like, still seems a lot at the time, but like er, still feels like you’re saving money at the same time.”*

**Participant 29 (Male, 19) session 2**

*“Erm, I don’t gamble as much as the last time I was in erm, it’s just like with the football season being over and that, I don’t really bet as much and when I do go in I don’t spend as much as I used to. “*

*“Erm, like last time I’d say I’m only going to spend a tenner or I’m only going to spend twenty quid. Then I’d find myself like, you end up spending more and then you just think oh Jesus. But now it’s like if I take twenty quid with the intention of spending that and if I’ve got more money in my wallet I won’t dip into that it’s just that much and then walk out.”*

**Participant 34 (Male, 34) session 2**

*“I’ve stopped gambling, well I’ve still gambled on them but not as heavy. I’ve started putting less money in them no.”*

The above quotes exemplify the reduction in stakes during gambling episodes. Whilst time and money spent do not in themselves predict either problem gambling or change in levels of problem gambling in the current research, it is control of these factors that seem to be at the forefront of gamblers efforts when deciding to control their overall gambling behaviour.

**Participant 30 (Male, 47) session 2**

*“Well yeah, like I said I’ve tried to get into a relationship so I’ve cut me gambling down, I’ve had two bets in the last three-month. And that’s it. “*

**Participant 37 (Male, 31) session 1**

*“I’ve gambled, over all I’ve cut down on more the more things like the fruit machine type gambling than say you know three or four years ago, yeah”.*

**Participant 53 (Male, 23) session 2**

*“feel positive, because erm, I always think if this charity hadn’t came into place and I wasn’t so busy all the time, like erm, I just think it would be a negative thing, and when I’m working all the time, I think about things to use my money for instead of gambling you know. So I start seeing other things and think oh yeah, great. And I just kind of, just feels better. Not doing it.”*

An interesting aspect of acknowledging change in gambling behaviour comes from those who recognise that they appear to actually achieve greater enjoyment by reducing their gambling involvement. This can be from either wagering less money during bets, or being more selective in their placing of bets, either for specific events, or gambling activity. There appears to be a sense of removing the concern of losing too much money. Most of the gamblers at some time during their narrative across the various sessions acknowledge that they are going to lose. By reducing their stakes, the gamblers reduce the amount they can lose, but enable a continued gambling career. As for many the benefit of gambling is not actually about winning, but more to do with the social and dissociative effects, removing some of the concern over big losses creates a sense of increased enjoyment.

**Participant 37 (Male, 31) session 3**

*“Because it’s only, the stakes smaller then it’s it’s it’s, it’s easier to bear really. So erm. So yeah it’s probably more enjoyable in a way. “*

*“While I think about more what I’m doing, a bit more with it as well. ‘Cause whether I bet two or three pounds or four pounds, it doesn’t I don’t get an extra buzz from betting the double amount necessarily.”*

*“Erm, probably enjoy it more actually. Erm, well if you do, I mean obviously it’s not an, it’s not an er science per se but if you bet on something and you make an error and then you look back and you think why did I do that, that was a stupid bet, erm. Because it’s only, the stakes smaller then it’s it’s it’s, it’s easier to bear really.”*

**Participant 55 (Female, 37) session 2**

*“No, I actually enjoy it more because I haven’t got as much to lose, I’m enjoying the sport rather than the the the other side of it makes you feel ill, when you see the money you lose. And so I enjoy it more.”*

**Participant 30 (Male, 47) session 2**

*“I wouldn’t go and gamble on the horses, gamble on the machines. No chance.*

*Yeah. I’ll keep where I am yeah aye. I’m not going back there. “*

For some of the gamblers a great degree of change occurred through the process. For Participant 30 (Male, 47) the main difference was the beginning of a relationship that took them away from their past gambling behaviour. This involved a complete re-evaluation of past behaviours and what appears to be a deep level of change in their personal view toward gambling. Of course it would remain to be seen whether this change is permanent.

## **6.4 Summary**

### **6.4.1 Limitations**

The twelve participants that were identified as being the most problematic and changeable had the majority of change being experienced by those lower on the PGSI scale. So whilst they were gamblers, experiencing some level of problems and change, they were arguably not within the range of the most problematic gamblers. Therefore, the findings regarding change in narrative may not apply to a specifically high problem, high frequency sample. In addition, the narrative created during interview with a researcher, may not correspond with the more personal narratives shared amongst friends, family and other gamblers. It may not, therefore be an accurate portrayal of items such as self-identity or the social influences alluded to from the analysis here. Future research could look to examine gamblers talk in more natural and personal settings, such as gambling establishments as well as the interactions between gamblers online in forums and disclosure via online interactions.

The analysis of qualitative data was undertaken solely by one researcher and, as mentioned in Chapter Five, there is potential for bias in the analysis. This is acknowledged to some extent by the use of Interpretative Phenomenological Analysis, however there is scope to incorporate other qualitative approaches. The application of inter rater analysis and participant verification could be used to examine the strength of the analysis here (Potter & Hepburn, 2012).

### **6.4.2 Summary**

The six themes identified and the relationship between them and the gamblers transitions from problem behaviour into reduction of problem behaviour describe the route that many take when changing their self-ascription to problem gambling behaviour.

1. External influence and facilitation
2. Disorganised Behaviour
3. Conflict
4. Self-identity and narrative
5. Organised Behaviour
6. Change

The first two themes that were identified largely occur during the stages where gamblers are engaging in frequent and uncontrolled gambling behaviours, heavily influenced by their environment and social networks. Because of this there is often a lack of organisation in their gambling choices, due to the influences being largely dependent on situations and factors outside of their personal control.

Conflict is a key factor that Orford (2001) refers to when explaining addictive behaviours in the excessive appetites model, and also appears in behaviour change models such as the Transtheoretical model of Prochaska and DiClemente (1998). It often signifies the awareness of an issue in one's behaviour and the potential need for change. But this creates conflict due to the desire to continue in the behaviour despite an awareness of the damage it brings. A similar point was identified by Davies (1998) when examining drug addicts' narratives that behaviour often changes from being a purely enjoyable activity, to moving into a state of paradoxes, with both positive and negative outcomes, and subsequent conflicting attitudes towards the behaviour. This does not simply mean that one decides to no longer be a gambler. This can then be observed in the gamblers re-evaluating their position and their

behaviours. It can often be the case that rather than create a gambling free identity, the change in self-identity can be to become more accepting, or acknowledge a need and a place for gambling in their lives, in order to remove the conflict that was once present. One of the pathways out of problem gambling behaviour appears then to be simply a re-evaluation of the behaviour. This does not always involve any changes to time, money or activities engaged in, but often the removal of some cause of conflict.

However, what appears to be a more constructive change is to the organisation of the gambling behaviour. Taking more control over gambling choices, such as limits or different types of gambling activities appears to help alleviate some of the internal conflicts whilst maintaining some of the positive elements enjoyed in controlled gambling. For several of the participants there is no problem with gambling in general, but only during a particular type of activity to problems arise. A good example of this is Participant 55 (Female, 37), who having gambled in a very controlled manner for many years, suddenly began engaging in online slot machines and FOBTs. It was only these specific activities that caused problem behaviours. For several participants there is a clear distinction between activities they can control and those they cannot. Quite often dramatic changes in self-reported problems are accompanied by changes to one specific activity which was the one gambling activity that was disorganised, whilst gambling continuously without problems for the organised activities.

The final theme, whilst it may seem obvious to include the theme change when examining change, is a demonstration that self-reported awareness of changes in one's behaviour appears to of particular importance when establishing new behaviour. Those who reported changes, and for whom changes could also be seen in the self-report data, made clear reference to qualitatively different attitudes and expressed either a clear need to change, or observed specifically what had changed in their behaviours.

These themes will be discussed in more detail in conjunction with key theory and in relation to the self-report and implicit measure data in the next chapter, Chapter Seven.

# Chapter Seven: Discussion and Conclusions

## **7.1 Introduction**

This chapter will bring together the results and key discussion points from the previous chapters. It will first reiterate the initial aims and methods then retrace the steps of the initial quantitative analyses and qualitative analyses separately. It will then examine what can be learned from combining these different approaches. The discussion will draw on some of the previously mentioned theories and research regarding addiction, gambling and behaviour change introduced in Chapter One. It will also bring in the theoretical concept of dual processing, and look at how different aspects of dual processing might be applied to the different methodological approaches employed here and the interpretation of the findings. Issues and future directions for research will be considered and then finally the overall conclusions drawn from the research and its potential applications will be offered.

## **7.2 Aims and methods**

The course of this research has followed two key aims. The first was the combining of three different approaches in collecting data from regular gamblers examining the relationships between the approaches. The second aim was to follow the same regular gamblers over a period of time, to observe changes in the measures taken from the different approaches and again examine relationships between change across the different measures. This research therefore followed a longitudinal design, involving multiple measures of problem gambling. The full method is detailed in Chapter Two. To summarise, sixty regular gamblers attended multiple sessions at three-month intervals. At each session participants answered self-report questionnaires on gambling engagement, problem gambling, fallacious beliefs and dissociation. Participants also completed two implicit tasks, aimed at identifying underlying unconscious processes that may relate to problem gambling: the gambling Stroop task, and the Mouse Tracker Roulette task. Participants were also interviewed on their gambling attitudes and behaviours. This gave three strands of investigation when potentially identifying problem gambling: Traditional self-report questionnaires, self-disclosure through interview and implicit task responses. Quantitative analysis was conducted on all aspects of the data collected to explore whether self-reported levels of problem gambling could be predicted by data collected via any of the other measures. This analysis is described in detail in Chapters Three and Four.

Following the quantitative analysis, a large part of the research involved a more in depth qualitative analysis, taking two different approaches to analysis of the qualitative data detailed in Chapter Five and Six. This examined what gamblers say about their behaviour and whether there are relationships between gamblers' discourse and their self-reported levels of problem gambling behaviour. This was focused on the twelve most changeable and problematic gamblers. Chapter Five detailed the theoretical approach examining gamblers' narratives for theoretical constructs that relate to gambling behaviour. Chapter Six followed an IPA methodology exploring the narratives to understand more fully how gamblers express

their attitudes, beliefs and experiences of gambling. By combining these different methods an attempt has been made to triangulate a position that allows for a coherent understanding of the data collected from this sample of regular gamblers in the context of recent theoretical approaches to understanding gambling behaviour and change.



### **7.3 Explicit and implicit measures**

Chapter three examined the first session data which included sixty participants and the findings from quantitative analysis of the self-report, interview and implicit task data. The interview data for this section were analysed quantitatively using the LIWC2007 programme which measured frequency of word use in natural speech to give numerical output figures on the content of the interview data (Pennebaker et al, 2007).

When a regression analysis was applied to establish whether any of these types of measure could predict problem gambling, it was found that aspects from each approach made a significant contribution to the predicted variable. From the self-report measures it was found that the number of different gambling activities someone took part in in the past week and their self-reported dissociation contributed to the predicted variable in keeping with previous research; e.g. Gupta and Derevensky, 1998; Wood, Gupta, Derevensky, and Griffiths, 2004; and findings from the British Gambling Prevalence Survey (Wardle et al., 2011) that found problem gambling levels increased greatly amongst regular gamblers taking part in three or more different weekly activities (see Table 2.2).

In the implicit tasks, responses from the Roulette MouseTracker stick trials significantly improved that prediction. This is the first time that such an implicit task has been demonstrated to be of value and represents a key finding of the programme. Interestingly the Stroop task, which has long been held as a robust measure of attentional bias amongst addictive behaviours (Cox et al, 2006), shows only a trend towards predicting beyond that of self-reported problem gambling. By quantitatively analysing the interview content, the linguistic category of negative emotions further added to the prediction of problem gambling by an additional 4% (see Chapter Three).

These findings demonstrate that utilising three different approaches (traditional self-report questionnaires, implicit measures and interviews) produces a fuller and stronger prediction of problem gambling than only using one approach. The value of this will be

considered further in this chapter. It is in keeping with theories of conditioning and addiction that gamblers who present as having higher problems also engage in the behaviour more frequently and with higher levels of expenditure than non-problem gamblers. It is also in keeping with past findings that we would find a relationship here between problem gambling and fallacious beliefs (Laurie, 2000; Hudgens-Haney et al., 2013). Dissociation has been previously identified as a prominent factor in gambling behaviour (Jacobs, 1986; Gupta & Derevensky, 1998; Wood, Gupta, Derevensky, & Griffiths, 2004), and here we find that a measure of dissociation helps predict levels of problem gambling.

Previous research (Kahneman & Tversky, 1982) has found that typically people (non-gamblers) make decisions in a way that protects their current standing when winning, i.e., they take fewer risks to maintain their winnings. However, as people enter a situation of loss, they show increasingly risky, and less considered behaviour as if they have nothing to lose, when in fact they of course do continue to lose an increasing amount. Regular gamblers, who gamble several times per week on more than one activity, will experience proportionately larger losses during their gambling activities than those who gamble less often due to the probability of losing more as gambling behaviour increases. One possible interpretation of this comes from previous research, which suggests that neuroadaptation resulting from the repetitive behaviour of high frequency gambling, could affect decision-making due to changes in impulsivity and lack of inhibition (Shaffer & Kidman 2003; Clark, Lawrence, Astley-Jones, & Gray, 2009; Winstanley, Cocker & Rogers, 2011; Karim & Chaudhri, 2012; Dixon, MacLaren, Jarick, Fugelsang & Harrigan, 2013). In the current study however, the number of activities was recorded rather than the frequency with which a given activity was engaged in, and this helped predict problem gambling behaviour. This could imply that being aware of a variety of gambling experiences may be as important as focusing on a single gambling type (LaPlante, Nelson, LaBrie, Shaffer, 2009).

In contradiction to Boyer and Dickerson (2003) the Gambling Stroop Task did not predict problem gambling. However, this is possibly due to the generic nature of the current

gambling related stimuli. In Boyer and Dickerson's research, a specific group of 60 gamblers who mainly played slot machines were targeted and the Stroop task materials were designed specifically around that activity, with terms that were specific to the playing of slot machines. Participants were measured on The Scale of Gambling Choices, which examines levels of impaired control over gambling behaviour, rather than directly measuring levels of problem gambling as with the present research. Boyer and Dickerson then split their participants in to equal groups of high and low control based on their scores. Those who had good control over their gambling behaviour showed no difference between reaction times across the three word categories used. Those who were worse at controlling their gambling behaviour were significantly slower when naming colour words that related to gambling activities, specifically poker machines.

Gambling as a general term and the gambling participants who were tested in the current research bridge a wide range of different types of gambling activity. It is possible that to elicit a substantially measurable response from gamblers during a gambling Stroop task, that the stimuli need to be more salient to the specific preference of the gambler in question. However, there was a general trend amongst all participants in the current research, that the gambling stimuli caused a slower response time than either the negative or neutral stimuli, even though this was not seen to be related to an increase in problem levels of gambling. This in keeping with previous applications of the emotional Stroop task, when identifying levels of addiction (Cox et al, 2006).

Compared to neutral words it can be seen here that negative emotional words caused greater distraction and subsequently slower reaction times during the Gambling Stroop Task, which might be expected amongst any sample whether gamblers or not. Whilst this occurs, the gambling words produce even greater delay in response times than either neutral or negative words, suggesting some influence specific to gamblers, but to examine this fully comparisons need to be made with a non-gambling sample.

There is scope to investigate the usefulness of the current Stroop task further. One of the ways that the current Stroop task could be further explored is using more high problem groups of gamblers. The current sample are largely average regular gamblers with various scores along the problem gambling continuum. It is possible that the Gambling Stroop Task is not sensitive enough to identify differences between them. The inclusion of larger numbers of high spend, high time, high frequency gamblers in addition to the mid-range and low level or non-gamblers may indicate whether or not this type of Stroop task yields any usefulness in predicting levels of problem gambling. If the Stroop is able to identify differences between high level problem and non-problem gamblers it would add another implicit measure, helping to identify serious problem behaviour without explicitly asking or relying on honest self-report amongst a group defined by the characteristic of trying to hide their levels of gambling behaviour. However, it may have value as an early intervention measure as it stands, because high levels of time and money spent gambling may be a precursor to problem gambling (Wardle et al., 2011).

The Gambling Stroop Task possessed no significant relationships with PGSI score, but did have a significant positive correlation with time spent gambling in the past week and differences between reaction times on neutral and gambling words in the Gambling Stroop Task. This is in keeping with one theory applied to the emotional Stroop phenomenon, which is the theory of current concerns (Klinger & Cox, 2004). This states that reaction times are affected by salient words that relate to a person's current preoccupations. So while it may not identify problem levels of gambling behaviour, it may be tapping into the extent to which a person is preoccupied or concerned about gambling. So whilst the current Gambling Stroop Task does relate in an expected way to the overall sample's delayed response to generic gambling terms, and appears to also tap into higher levels of gambling engagement, it does not add to the model for prediction of problem gambling above that provided by other measures.

As will be discussed, there are elements from the current research that suggests that gambling as a generic activity needs to be re-evaluated when analysing the specific complexities of problem behaviour. Attempting to tease apart the key elements of problem behaviour requires more than a generic approach or a single tool that captures all elements in play. By recognising that the generic sample responds to the generic selection of gambling words, we can acknowledge that the Gambling Stroop Task does tap into some degree of identifying gambling behaviour. The fact that it does not differentiate between problem and non-problem gamblers adds weight to the development of an approach which does not classify all generic gambling behaviour as harmful for all gamblers. To identify that level of harm at more subtle and specific levels requires potentially a more precise approach when choosing stimuli. Looking at the Gambling Stroop Task findings in another way, it does capture high levels of time and money spent gambling, just not self-reported problem gambling. This in itself may be of value as a measure identifying levels of gambling engagement in a group who potentially hide the extent to which they gamble, and also because high levels of engagement have previously been found to have strong links to being at-risk of problem gambling (Wardle et al., 2011).

Of the two implicit measures that were adopted (Gambling Stroop Task and Roulette MouseTracker Task) only the Roulette MouseTracker Task has elements that correlate with and predict the PGSI measure. To recap on the Roulette MouseTracker Task, the participants observe a sequence of red and black squares on a computer screen that emulates past outcomes on a roulette wheel. When the sequence ends the participants are asked to select which colour they would bet on winning next. The programme records the colour selected, and also the movement of the mouse across the screen during the selection. The typical choice is to switch to the opposite colour from the last winning colour, on a mistaken assumption of gamblers fallacy (Kahneman & Tversky, 1974).

During these typical choices there is nothing unusual or distinguishing between levels of problem gamblers. However, when gamblers choose to stick with the same colour as the

last winning colour there is a relationship between problem gambling and the lack of consideration of the more typical choice. I.e. non-problem gamblers, if electing to stick, would still make movement towards the typical choice (switch) before deciding on their final choice (stick). Problem gamblers demonstrate less consideration of the alternate during these choices, making more direct movement to their final selection. This is found specifically when participants make a non-typical sticking response in their Roulette MouseTracker Task decisions. The measure of interest in the MouseTracker task is the maximum deviation that the mouse path of trajectory takes when moving from the starting point to the final selection (Freeman & Ambady, 2010). A straight line from the start point to the selection would have a maximum deviation of zero. The larger the maximum deviation, the closer the mouse gets during its trajectory to the un-selected choice before finally arriving at the selected choice. The trajectory of the mouse movements during the stick trials has a significant negative correlation with higher scores on PGSI, suggesting less consideration of the normative alternate response by those participants who score higher on PGSI as opposed to those whose PGSI score is lower.

There are a number of possibilities why higher problem gamblers act more directly for sticking choices than those who score lower on the PGSI. The first of these is impulsivity; gamblers just go more directly for their selections. Redish et al (2008) highlighted several theories of addiction that examine the influence of impulsivity and illusion of control in gamblers. It is believed that problem gamblers may have impaired decision-making abilities, and this is affected by lack of impulse control and lack of inhibition, leading to an increase in risky decisions. An increase in risk taking is complemented by a lack of consideration for possible future outcomes, or goal protecting behaviour. Impulsivity was not specifically measured amongst the self-report measures used here but is a potential consideration to be included in future research. During the Roulette MouseTracker Task trials, gamblers who score higher on the problem gambling continuum also show lack of inhibition, or consideration of the alternate response during each decision no matter what information is

available to them. Each decision made by more problematic gamblers is perhaps being more impulsive than non-problem gamblers, who demonstrate more consideration when they are less sure of their decision due to the information available (Heyman, 2009; Maccallum, Blaszczynski, Ladouceur & Nower, 2007).

During stick decisions the sample as a whole are assumed to be considering the other option. However, if the effect observed for deviation is simply impulsivity there should also be a correlation between PGSI and reaction times during the Roulette MouseTracker Task. Reaction time data show that there is a slight difference between switching and sticking, with switching being a quicker response. However, we might expect to see that problem gamblers are quicker than non-problem gamblers in their sticking responses, as they are also more direct. This is not the case. There is no indication that as problem gambling increases, reaction times decrease on sticking trials. So is it impulsiveness or confidence? There is no relationship between confidence levels measured by the percentage of success predicted by participants after completing the Roulette MouseTracker Task and PGSI. This might suggest that it is not confidence. However, as this question is asked after the event, there could be a change between implicit confidence during the task, and self-reported confidence after the task. Se and Ladouceur (2003) suggests that problem gamblers engage in a double switch, where they report rational beliefs regarding the outcome of a gambling task both before and after the task, but switch off this rational perception during the task. Perhaps this is what is being captured during the implicit responses during the Roulette MouseTracker Task. The participant decision-making for both stick and switch decisions demonstrates the same lack of consideration of the alternate response, which differs from those who score lower on the PGSI. The data suggest that there is interference from System Two, the conscious, cautious element that slows down the immediate selection for those who are not problem gamblers when making unfamiliar choices. But for those that score higher on PGSI, it would appear that all decisions are made with the same intuitive, confident, quick System One (Redish, Jensen, & Johnson, 2008; Bargh, Schwader, Hailey, Dyer and Boothby, 2012). If this behaviour during

the Roulette MouseTracker Task can be interpreted as increased confidence, it supports previous findings that suggest problem gamblers are prone to errors in perceived control and over confidence during such tasks (Hudgens-Haney et al., 2013). This apparent lack of consideration of alternative outcomes during the Roulette MouseTracker Task is also in keeping with previous research which found that problem gamblers have issues with inhibitory control during gambling decisions and lack consideration of consequences during the decision (Brand, Kalbe, Labudda, Fujiwara, Kessler & Markowitsch, 2005; Maccallum, Blaszczyński, Ladouceur & Nower, 2007).

Parke and Griffiths (2005) recommended that gambling research should examine the measurement of problem gambling using multiple measures. The outcomes here suggesting that problem gambling can be predicted using a new implicit measure is promising for future assessment and measurement of problem gambling. This combined with knowledge of a person's past week gambling activities gives a strong reliable indication of level of problem gambling. The area is ripe for further investigation though development of the new Roulette MouseTracker Task, alongside measures of impulsivity and adaptation of the task to include elements of more realistic game play.



## 7.4 Longitudinal quantitative analysis

The measures initially analysed in Chapter Three were then also recorded longitudinally for all participants who completed more than one session (Chapter Four). This produced a sample of 41 participants who completed at least two sessions in a repeated measures design. Sessions for analysis were selected as the highest and lowest scoring session for each participant based on their responses in the self-report questionnaires, primarily by PGSI score. Because the primary interest here is in factors that might relate to change in behaviour, the highest and lowest scoring sessions were selected to examine greatest magnitude of difference between sessions. This enabled analysis of relationships between measures across sessions, and to potentially identify if the *changes* in PGSI score could be predicted by *changes* in any of the other measures. However, there were no significant correlations between change in PGSI and changes in other self-report measures. It might have been expected that increased self-reported problem gambling could correspond with changes in other self-report measures. From the analysis in Chapter Three, all of the self-report measures correlated positively with higher scores on PGSI. When looking at how individuals change, none of the other self-report measures show change in relation to increased PGSI. However, when examining the data from both the low sessions and then the high sessions, PGSI does have relationships with the majority of self-report measures found in the larger sample in Chapter Three. In the high PGSI sessions this relationship extends to certain aspects of the implicit tasks also (See Chapter Four) and is stronger in some of the self-report measures, which suggests that the relationships between the measures being used do inform us to some extent of the degree of problem gambling behaviour that is being captured.

From Chapter Three we find that multiple measures reliably predict whether one person is more likely to be a problem gambler than another. The self-report measures all have correlations of between .3 and .5 and the key implicit task measures also have correlations above .3. Self-reported change in an individual does not correspond with changes in the same way across the same measures. This might suggest that change either toward or away from

problem gambling is a more complex process and more difficult to predict than the occurrence of problem gambling itself. Does this bring us back to some of the points that Davies (1998) and Heyman (2009) make when suggesting that (at least some of) an addict identity is self-constructed? It is the individual who decides (perhaps unconsciously) whether they are addicted. It is not simply defined by their behaviours, but their self-concept and attitude toward those behaviours.

The observations of Evans and Coventry (2006) suggest that addicts will often confabulate as a part of post-event rationalisation of behaviour. Self-reporting of change in an individual therefore may be an unreliable indicator of change, unless accompanied by changes observed elsewhere. This would be in keeping with one of the issues discussed in Chapter One of this research and key characteristics of problem gambling cited in the DSM-5; that gambling addicts may be unable to accurately report on their own levels of problem gambling. If a fundamental change is occurring in the gamblers' behaviours, then this should be captured in both the measures of gambling engagement and the implicit tasks that capture unconscious predictors of problem gambling. However, it is primarily the individuals' self-reported problem gambling behaviour on the PGSI that is identifying any change. This occurs initially in the self-report questionnaires, and then later as will be discussed, in the interview data. The other measures, implicit tasks and more direct measures of engagement and attitude, do not show corresponding changes, even though they appear to contribute to the overall accuracy of predicting problem gambling when looking at the sample cross-sectionally (Gawronski & Label, 2008; Sheeran, Gollwitzer & Burgh, 2013).

This complexity and difficulty in predicting change, compared to identifying problem gamblers from a sample, is in keeping with dual processing theories which would suggest that one of the difficulties addicts face when attempting change is that they cannot control some of the underlying unconscious System One processes that hold a stronger influence over their behaviour than the more conscious System Two processes which are responsible for their self-reports (Wiers & Stacy, 2006). It is therefore possible that change in subjective attitudes

reflected in PGSI is not reflected in concurrent implicit measures which may be subject to a lag in terms of measurable change. It would make an interesting study to investigate this fully.

The effects of conditioning, cognitive biases and fallacious beliefs in terms of internal processes; alongside the multiple external influences on attitude and behaviour that influence gamblers, are largely taking effect in conjunction with System One; intuitive, habitual and unconscious. By using self-reported levels of problem behaviour as the benchmark to which all other measures can be held, only gives insight into the self-perception of behaviour, not an insight into processes beyond the individual's conscious perceptions (Gawronski & LeBel, 2008; Sheeran, Gollwitzer & Burgh, 2013; Gawronski & de Houwer, 2014). It is highlighted in Chapter One that self-report methods are open to criticism because the act of self-reporting could be influenced by the internal processes that constitute the behaviour. However, in attempting to understand behaviour it still seems apparent that asking the individual about their own behaviour is an important piece of the puzzle, just not the whole solution.

Future directions in measurement of problem gamblers stemming from the Roulette MouseTracker Task findings, could lead to further understanding of the implicit decision-making processes gamblers use when faced with probability and risk. Incorporating a level of game playing and the manipulation of perceived risk in the decision-making process might be enlightening (Clarke et al, 2013). Wins, losses and near wins affect the psychological responses of problem gamblers during gambling tasks (Orford, Wardle, Griffiths, Sproston, & Erens, 2010) and by introducing elements that emulate more closely the actual experience of winning and losing during gambling decisions greater understanding of these internal processes may be developed. Furthermore, involving a context of actually losing or winning in the decision-making process task could further increase our understanding of how these elements affect the gamblers' behaviour and the possible relationships with inhibition, impulsivity and confidence in more ecologically valid experiences.

## **7.5 Qualitative approaches**

Chapters Five and Six focused on qualitative analysis of the interview data. This looked more closely at the twelve participants who demonstrated the greatest degree of both problem levels of self-reported gambling and change. The first of these qualitative approaches was described in Chapter Five, which adopted a theoretical approach and examined the interviews of key participants during their lowest and highest scoring phases on the PGSI scale. The second qualitative approach was described in Chapter Six and involved an Interpretative Phenomenological Analysis (IPA) approach, which was a more in-depth analysis examining all interviews from each of the key participants.

In Chapter Five the twelve most changeable and problematic gamblers were selected from the original sample of 60 based on their self-reported gambling behaviour across all sessions. For each of the twelve problematic or changeable participants, their interviews were analysed at the time of highest scoring self-reported gambling behaviour and lowest scoring self-reported gambling behaviour, without knowing which interviews related to which scores. This was initially analysed in relation to established theory regarding addiction (Orford – Excessive Appetites, 2001; Erosion Theory, 2012) and behaviour change (Prochaska & DiClemente 2008), with key aspects of gambling related cognitive associations included (fallacious beliefs, dissociation). An analysis tool was designed which took into consideration key factors that are identified as contributing to problem gambling based on past theory and research (Anthony & Helzer, 1991; Heyman, 2009; Orford, 2001 -2012). The categories explored were cognitive, behavioural, social and environmental. When examining the interviews of the most changeable and problematic gamblers, it was found that there was no single common category that corresponded with an increased self-report of PGSI. However, greater reference to each of the behavioural, social and environmental categories as a negative influence leading toward increased gambling behaviour emerged during periods when participants reported higher levels of problem gambling (PGSI). The cognitive category was not as clearly defined, as often individuals would report mixed feelings regarding both their

self-evaluation in regards to their gambling behaviour, and their attitude and gambling affect. However, for some individuals when reporting higher levels of problem gambling (PGSI) this was accompanied by an increased reference to overall negative affect and self-evaluation regarding gambling behaviour. Essentially during phases of high self-reported problem gambling behaviour, there were a significantly larger proportion of the gamblers' narratives that contained references to each of the domains in a way that could be identified as moving further into or towards problem gambling. During the lower scoring phases, the tone of the narratives changed to make less reference to the negative attraction of gambling and contained more references to factors that discouraged gambling and promoted alternative views, attitudes and behaviours (Kurti & Dallery, 2012).

Davies' (1998) work with heroin addict's established distinct narrative functions that corresponded with different levels of addictive behaviour. These include such things as reference to behaviour as being purely fun and problem free during a positive non-addict level. When moving into an addicted stage such references are replaced by unstable and contradictory statements, accepting the inevitability of addiction, reducing addictive behaviour to conceptual triggers such as physiological or psychological reasons, reducing the concept of choice and self-ascribing an addictive personality. Likewise, Stephenson et al (1997) examined narrative change quantitatively amongst various addicts finding significant structural changes occur in the narratives of those who successfully overcome their addiction. More recently Moriera et al (2008) have also combined methods of qualitative approaches and quantitative analysis to find that significant measurable differences occur in individuals' self-narratives as they move out of problem phases of behaviour. Similar differences have been observed here amongst gamblers, where during periods of self-identified high or low problem gambling behaviour, measurable changes in the form and function of the narratives given can be observed (see Chapter Five). Across various specific dimensions of interest, using a new method of analysing qualitative data with gamblers, it was found that during periods of high problem gambling gamblers produced significant, measurably different self-narratives than in low problem periods. This adds to the previous findings that suggest narrative change is

closely linked with behavioural changes in problem behaviours (Davies, 1998; Stephenson et al. 1997; Moriera et al, 2008). Whether or not the narratives offer any sort of explicit or objective account on the part of the individual does not detract from the evidence that individuals go through a process of change in their self-narrative as part of the overall process of behavioural change (Wetherell, 2001; Derrida, 1993).

The research presented here has applied similar techniques to gamblers for the first time and found that there are potential markers and characteristics in gamblers' self-narratives that could help identify problem gamblers and also be useful in assisting a fundamental change in self-identity from problem to non-problem gambler. Such change in self-identity for addicts has been described as key in establishing long term changes to problem behaviour (Biernacki, 1986; Ricoeur, 1984; Wetherell, 2001; Derrida, 1993).

To further explore the interviews, qualitative analysis following the IPA methodology was conducted on the most changeable and problematic gamblers. This analysis was conducted by examining all the interviews from all of the twelve key participants. Themes of interest that emerged from the changeable and problematic gamblers were:

- 1. External influence and facilitation**
- 2. Disorganised Behaviour**
- 3. Conflict**
- 4. Self-identity and narrative**
- 5. Organised Behaviour**
- 6. Change**

The themes identified give insight into the complex relationships between the gambler and their network of support and influences. As well as the various different elements that contribute toward successful change in an individual, the themes identified and their temporal use represent the route along the problem gambling continuum. Reference particularly to

external influences, disorganised gambling and internal conflict were found to be more prevalent in the interview sessions where gamblers were reporting higher levels of problem gambling (PGSI). For many problematic and changeable gamblers conflict and disorganisation were combined in their erratic and problematic behaviour regarding one specific gambling form, whilst other forms appear to be more controlled. When reporting lower levels of problem gambling, gamblers were more organised in their gambling behaviours, favouring specific activities, with clear guidelines regarding their limits and general gambling behaviour. Participants also appeared more internally influenced regarding their decisions about gambling behaviour and there were fewer references to any kind of conflict regarding their behaviour.

Orford (2012) suggests that the wider social context one finds oneself in is a prominent influence on whether one engages in gambling behaviours. Alongside the wider moral context, the more immediate social contributions of friends and family have long been held to influence through familiarity and conditioning, but also through the rewards of social standing and esteem gained by demonstrating gambling prowess i.e. apparent skill, knowledge or success (Orford, 2001). The findings here support these assertions. References to the external influences that play a part in gamblers' levels of engagement and behaviour are widespread and common throughout the interviews obtained in the current research.

The second theme of disorganised behaviour encompasses several key elements of gambling addiction such as chasing losses (Shaffer & Kidman, 2003) and gambling as an escape mechanism (Gupta & Derevensky, 2001; Nower, Derevensky, & Gupta, 2004), rather than a practical attempt to make profit. Disorganisation during gambling behaviours also picks up on some of the findings from the quantitative analysis of the earlier chapters; that excessive variety in gambling activities, fallacious beliefs and dissociation have strong relationships with problem gambling behaviour.

In the context of dual processing (Wiers & Stacy, 2006, Kahneman, 2007; Borland, 2013), the first two themes fall under consideration of System One responses. These two themes are heavily influenced by external stimuli and making intuitive, unconscious and conditioned decisions, which are largely out of the individual's conscious, autonomous control and with little regard to the logical practicalities of wagering money in the face of improbable odds.

The third theme of Conflict appears when there is disparity between behaviour and conscious thoughts or attitudes and values pulling in different directions, which represents some of the struggle between System One and System Two thinking. Participants continue to engage in behaviour because they get some degree of benefit; however, there are elements of conscious concern which pull against the desire to continue gambling. This exemplifies the concept of dual processing and the battle between unconscious habit, and conscious awareness of potential harms (Wiers & Stacy, 2006; Borland, 2013). It is also one of the mainstays of Orford's model of addiction that conflict and conflict resolution have large parts to play amongst the addict's career. Davies (1998) also found that amongst heroin addicts, there is a stage at which their self-narrative features opposing attitudes towards their behaviour, being both negative, but alluring. This is regarded by Davies as part of entering into an addictive phase of heroin career. The acknowledgement that there is a problem with the behaviour, but the continuation of the behaviour and the conflict in self-evaluation that arises from these opposing forces, seems to be a key element in the self-ascription of addiction across more than just gambling behaviour.

The final three themes fit more closely with conscious thought processes, meaning making and explanations of behaviour, which is System Two thinking. This also corresponds with Borland's (2014) approach to dual processing, which associates language with the executive decision-making processes. The gamblers use narrative constructs, demonstrate rationalisation of their behaviours and make reference to changes that they have observed in their own behaviours. Along with identifying the cause and effects of change, this fits closely



with Borland's explanation that the rationale executive system (System Two in Wiers and Stacy's, 2006 or Kahneman's, 2007 model) will confabulate meaning and value in order to explain or justify behaviours in a rational way using language to construct a sense of self that corresponds with discursive traditions of self-identity (Wetherell, 2001).

It has long been held that treatment for drug addict patients should include opportunities to re-construct their identities and promote change (Ricoeur, 1984). There is evidence from the current research that suggests the same process would be beneficial to problem gamblers. While various measures can be adopted to identify underlying unconscious processes that will undoubtedly play a large part in the maintenance of problem gambling behaviour, the individual also requires fundamental re-evaluation of their self –identity.

## **7.6 Mixed methods**

When looking at relationships between a selection of measures (implicit, explicit and linguistic), a comparison across a sample of regular gamblers suggests that those who report higher levels of problem gambling demonstrate corresponding relationships across the other measures. These measures relate to levels of gambling involvement, dissociation and impulsivity as well as underlying negative emotional factors revealed in natural speech. However, when examining change within individual gamblers across the same selection of measures as they report change in their levels of problem gambling (PGSI), the same relationships are not consistently sustained.

One possible explanation is that the factors tapped into by the implicit and behavioural measures, are potentially more stable than the individual's conscious self-reported levels of problem gambling (Gawronski & Label, 2008; Sheeran, Gollwitzer & Bargh, 2013). It may be that within individuals, whilst they may report change in their levels of problem gambling, some of the more stable unconscious attitudes and automatic responses are not changing (Gawronski & de Houwer, 2014). This can be seen in the difference between the findings from Chapter Three where almost all explicit and implicit measures correlate with problem gambling, but then these relationships disappear when looking at self-reported change in Chapter Four. This exemplifies the dual processing approach, where people explicitly report wanting or even making changes in addictive behaviour (System Two), but in fact due to some of the stronger, more established underlying unconscious attitudes (System One) find any permanent change to their behaviours more difficult than anticipated (Wiers & Stacy, 2006; Borland, 2013).

By examining the interviews in greater depth another dimension is then added to this picture of problem gamblers and the multiple factors involved in change. Self-reported change as measured by PGSI appears to correspond more closely to the way gamblers make sense of their own gambling identity. They do this through the external conflicts and influences they experience, applying meaning to the way they represent themselves and their current gambling

behaviours in natural speech. This change in self-reported problem gambling appears more related to self-interpretation of experiences and how attitude and narrative relate to the individual's interpretation of their gambling as either problematic or not. Less is revealed about the individual's attitude towards their gambling behaviour by the quantitative measures which consider gambling levels, or the implicit responses which are beyond the conscious consideration or interpretation of the individual. After all, a particular number of gambling activities, amount of money spent, or time allocated to gambling behaviour is not in itself problematic without being interpreted and contextualised with meaning, attitude or value. It appears to be the change in self-narrative that corresponds with change in reporting problem gambling, rather than the quantifiable measures of gambling involvement when specifically looking at change along the gambling continuum for individual gamblers (Gawronski & Label, 2008; Sheeran, Gollwitzer & Bargh, 2013; Gawronski & de Houwer, 2014).

The findings from the research presented here are in keeping with Orford's (2001) model of addiction, which suggests a change in attitudes, values, or beliefs precedes a change in behaviour. So amongst this sample of gamblers, followed over a relatively brief time, shifts in self-reported problem gambling are linked more closely to changes in narrative self-identify, than either quantifiable measure of gambling involvement or deeper levels of change in implicit behaviours. This also reinforces one of the defining characteristics of problem gambling; that problem gamblers may not be fully capable of honestly or reliably reporting on their levels of problem behaviours (DSM-5; Griffiths, 2004; Evans & Coventry, 2006; Wood & Griffiths, 2007). Whilst gamblers may recognise a change in attitude, some of the implicit behaviours that contribute to a gambling problem are by their very nature unconscious and outside the awareness of conscious control (Gawronski & Label, 2008). This also corresponds with the nature of dual processing, that there are two factors at work in any level of behaviour and decision-making, the conscious and the unconscious, and to understand the full process of change, attention must be given to both (Wiers & Stacy, 2006; Borland, 2013).

Boyer and Dickerson (2003) found the Stroop task distinguished between high and low control gamblers, but only amongst a quite specific group. The current attempt to use the

Stroop task as a more generic tool across a broad selection of gamblers fails to identify any relationship. In attempting to encompass a wide variety of gambling behaviours, the word selection for the current Stroop task is quite possibly too generic and diverse, particularly when in the light of the qualitative analysis which revealed that for many of the problem gamblers it was not gambling per se, but specifically one or two types of gambling activity that caused problems, while other regularly engaged gambling activities caused no problems whatsoever.

What can be learned from the current research is that specific gambling activities, even amongst individual gamblers, can create problems that are not identified across other gambling activities, even for the same gambler. So whilst a gambler may engage in bookmaker betting on horse racing or football without demonstrating or being aware of any associated problems, the same individual can express clear issues with gambling on Fixed Odds Betting Terminals, (Participant 55 (Female, 37)) or during a visit to a casino (participant 37). A broad range of generic gambling associated words therefore may not be specific enough to tap into the cognitive biases that cause delayed response to problem gambling areas, as is demonstrated here. Gambling as a generic pastime may not be problematic to an individual for whom a specific gambling activity can lead to significant problems. The current Gambling Stroop Task fails to contain activity specific terms that could be used to identify differences between and even within individuals. The words selected were purposefully identified as generic in an attempt to be useful across all common gambling activities. It is possible that attempting to encompass 'gambling' as generic activity is to approach the problem in the wrong way. What may need to be considered is that when comparing a selection of gamblers, certain measures are useful in distinguishing and predicting problem behaviour from one individual to the next. However, within an individual's behaviour, change cannot be so easily distinguished by quantifiable measures and initial changes in self-reported problem gambling have more to do with changes in explicit attitudes (which may be short term) than quantifiable gambling involvement or underlying cognitive factors.

It would be interesting therefore to follow gamblers who reduce their self-reported problem gambling in the short term for a longer period to see if after time the underlying cognitive factors also change as well as changes to explicit quantifiable gambling involvement. Or whether elements captured by the implicit tasks, such as the Roulette MouseTracker findings, remain even when gambling behaviour is reduced, which may suggest that a person may always be at-risk of returning to problem levels. Implicitly different decision-making processes and risk taking during gambling tasks may make certain individuals prone to gambling problems when exposed to particular gambling activities. Further exploration of this is required to establish whether these differences are changeable in the same way that explicit attitudes appear to be.

In many ways the various approaches employed here and their findings offer data that correspond to dual processing theories of behaviour and with particular relevance for hard to change behaviours such as addiction. In previous models of behaviour change there has been an emphasis on the individual's capacity, efficacy and decision-making before, during and in maintaining change (Prochaska & DiClemente, 1986). The dual processing approaches would argue that conscious decision-making alone is insufficient to necessarily bring about change as so many other variables play a significant part in someone's ability to alter deeply ingrained behaviours (Wiers & Stacy, 2006; Borland, 2013).

Here for the first time by applying these three approaches when capturing levels of problem gambling behaviour, there is evidence that gamblers may report changes in their self-perception of problem behaviours, in both self-report measures and interview, whilst maintaining some of the underlying unconscious cognitive biases that create difficulty in behaviour change. This supports various contemporary approaches to addiction and behaviour change such as the dual processing approaches. Here we have evidence of the two distinct systems at work at the same time. Gamblers also, during periods of problem behaviours create an identity suspended amongst a web of social, environmental and emotional factors that help maintain the problem behaviour (Anthony & Helzer, 1991; Orford, 2001), whilst simultaneously expecting to achieve change by only attempting to alter their own individual

contribution to the final outcome. This is often too great a battle for them to win, as the extraneous influences such as those of friends, family, gambling institutions and the wider moral opinion of society in general carry on promoting and encouraging the unwanted behaviour without any consideration of the individual's intention to abstain (Anthony & Helzer, 1991; Orford, 2001; 2011; Kurti & Dallery, 2012). The conflict created both internally and externally, between what is good or acceptable and what is detrimental, emulates the theoretical conflict described in dual processing theory (Wiers & Stacy, 2006; Borland, 2012). Gamblers want it to be good and easy to engage in gambling behaviour, because they have unconscious urges to do so; but they consciously know that in the long term such behaviour leads to negative outcomes. But the quicker, easier immediate fix is so much easier to submit to, especially when bolstered by the multiple external influences which at the present time in UK society are largely framing gambling behaviour as fun, socially acceptable and offering ultimately desirable outcomes (Orford, 2012).

The Roulette MouseTracker Task adds to the complexity of the story that emerges. Whilst conscious self-identify and attitude towards gambling is important when exploring change, the Roulette MouseTracker Task captures unconscious elements that potentially contribute to the ultimate difficulty in overcoming problem gambling behaviour. If we were to rely on self-report alone, we would not be aware of the underlying processes that appear to differentiate between problem and non-problem levels of gambling cognitions. MouseTracker has been used in past research to identify unconscious biases across many different attitudes (Freeman, Penner, Saperstein, Scheutz & Ambady, 2011; Papesh & Goldinger, 2012; Quinton, Volpi, Barca, & Pezzulo, 2013). This is the first time it has been used directly to measure gamblers' decision-making during a gambling task and offers insight into some of the processes at play that the gamblers themselves are not consciously aware of. It appears that during gambling decisions, problem gamblers demonstrate a lack of conscious consideration of the options or outcomes. This is again in keeping with dual processing models, and the strong links between dissociation that have been found in this research and previous research when examining gamblers (Gupta & Derevensky, 1998; Wood, Gupta, Derevensky, &

Griffiths, 2004; Wood & Griffiths, 2007). In the context of dual processing, the gamblers are relying more on System One's quick impulsive response to decision-making, without engaging the more thoughtful and restraining System Two (Kertzman, Lidogoster, Aizer, Kotler, & Dannon, 2011). In terms of dissociation, as identified by Ladouceur (2003), it is possible that what we see here is a disengagement of rational processing during the task.

In creating a concept of self as a gambler, one of the qualities gamblers ascribe to themselves is that of confidence in gambling decisions due to the illusion of control mistakenly believing that experience in a behaviour makes them better at that behaviour (Langer, 1975). Problem gamblers have been found in past research to be overly confident in their gambling decisions (Hudgens-Haney et al., 2013). This may be due to unwarranted belief in skill (illusion of control, false beliefs), which combined with exposure and potential neuroadaptation from frequent repeated gambling behaviours lead to automaticity of behaviour when making gambling related decisions (Redish, Jensen, & Johnson, 2008; Bargh, Schwader, Hailey, Dyer and Boothby, 2012). There is evidence that gamblers who experience problems temporarily change their cognitive approach to risk during a gambling task, and immediately revert to a more rational approach once the task has ended (Ladouceur, 2003).

PGSI has a significant correlation with fallacious beliefs, dissociation, time, money and gambling involvement, over past week, three-month and twelve-months measured. This goes some way to strengthen the argument for using self-reports, as they appear to form a coherent picture of someone's gambling behaviour. There are no mixed messages or unexpected outcomes from the results in Chapter Three which correspond with past findings regarding problem gambling and levels of engagement, fallacious beliefs and dissociation (Gupta & Derevensky, 1998; Wood, Gupta, Derevensky, & Griffiths, 2004; Hudgens-Haney et al., 2013).

## **7.7 Limitations**

This research has employed many different methods and approaches. As such it has been exposed to an equal number of issues, concerns and limitations. There is, as mentioned throughout the thesis, a question over any type of self-report method in accurately capturing behaviours. Whilst one of the aims of the research was to examine the relationships between self-reported behaviour and other measures of gambling behaviour, there is scope to improve the accuracy of data capture for some elements of this. Behavioural tracking methods enable accurate capture of online behaviours, due to the activities being recorded in real time, digitally, as the activities occur (Auer & Griffiths, 2013). Such methods could be used to strengthen reliability in collecting basic data on time, money and different types of gambling activities.

It has also been mentioned that the sample here whilst giving a reasonable cross section of average gamblers in the UK, does not contain enough high problem gamblers. Therefore, the analysis and conclusions drawn may not be generalisable to such high problem gamblers.

The implicit tasks used here are newly developed, and as such need further testing and development if we are to say they offer any real insights into the underlying cognitive processes of gambling behaviour. With regards to predicting levels of problem gambling, again only a small proportion of the participants were at any time in the highest degree of problem behaviour. Further investigation is required with more high risk, high problem gamblers to see if the instruments hold any true value.

Rather than only using one measure of gambling problems, this study could have incorporated other methods to evaluate problem behaviour. If, as discussed, a sample of high problem gamblers is needed, such participants could be clinically evaluated prior to completing the tasks and measures employed here. With regard to the qualitative aspects and the narratives of gamblers, it would be interesting to allow the friends and family of gamblers to provide their own accounts of the gamblers story. It is established that problem gambling behaviour directly effects those in close social relationships to the gambler (Rogers, 2013).



This alternate view could offer further detail and insight into the way a gamblers behaviour unfolds from the perspective of someone with an intimate perspective.

Whilst there may be doubts over an individual's ability to accurately or honestly self-report, here is evidence that self-report measures do contribute to our understanding of gambling behaviour. Self-reports, interviews and their construction of a gambling identity coherently coexist in the findings here without contradiction. Whilst accepting that there is no way of absolutely verifying self-report data, perhaps there is no need. The use of self-report data here demonstrates that it corresponds with various contemporary theories regarding gambling behaviour (Klinger & Cox, 2004; Orford, 2012). The theoretical concepts and lived experiences explored here provide an intertwined narrative that helps us understand problem gambling within the frameworks we currently use. We cannot say whether definitions or theories will change, but in keeping with modern concepts of social constructivism, it is possible that as they do, the real life effects of theoretical change will be reflected in the way people behave and give meaning and understanding to their own experiences (Truan, 1993; Reinerman, 2005). The emphasis should be on understanding the knowledge that is created by combining theoretical concepts, actual behaviours, and the narratives that hold them together.

Here by following a variety of current concepts and approaches, we have a coherent structure that exists between them all. None of the approaches employed here is flawless, yet by combining various methods each appears to add support to the other and give an overall practical understanding of problem gambling behaviour in its current context. So it is not whether implicit tasks do actually tap into underlying cognitive dimensions and processes, or whether people's free speech reveals the true self, or self-reports collect accurate unclouded insight into someone's behaviours. What is important is whether by exploring different methods, in the context of theories that help us make sense of human behaviour, we develop a stronger, more coherent understanding that helps us make sense of our present psychological world.

The next step is to explore ways in which this information can help improve quality of lives.

## **7.8 Future directions**

By using a variety of methods and measures, the present research programme has revealed something of the complexity in capturing problem gambling behaviour. That using a variety of different approaches adds to our understanding of problem gambling. It may also be reasonable to suggest that in order to develop ways to improve the lives of problem gamblers, a variety of methods will be better than any single approach. The techniques used here reveal something about both the internal processes involved with problem gambling, as well as the identity that the gamblers construct for themselves in their narrative. There is also something revealed about the complex interactions between gamblers, their social networks and society's attitudes toward gambling behaviour. Perhaps the way forward is to tackle each of these aspects.

There are promising findings from the two implicit tasks developed and used in the current research programme. The scope to develop these for use with problem gamblers in more ecological designs, could allow for their incorporation into gambling game play for at-risk gamblers. Developing tasks such as the Roulette MouseTracker Task and making it available online, could, in conjunction with data gathered regarding individuals' levels of gambling engagement (i.e. time and money spent, alongside the number of different gambling activities an individual takes part in during the past week) provide early predictors of potential problem gambling behaviour in that individual. Combined with the Gambling Stroop Task, the use of such implicit measures could help identify at-risk gamblers without explicitly asking them to complete standard self-report problem gambling measures which may not accurately capture all aspects of problem gambling behaviour and the processes that sustain it.

In addition, it appears from talking to gamblers that generic gambling behaviour is not necessarily the cause of any specific problems. Quite often gamblers will only experience problem levels of behaviour in connection with one or two specific gambling activities. This is supported from the interview data and previous assertions by Blaszczynski and Nower

(2002). Therefore, exploring ways of separating out different gambling activities within one gambler's experiences would be a useful avenue to explore. This could involve adaptation of existing self-report measures to differentiate between activities that are identified by the individual as problematic. It is often not gambling per se that causes problems to individuals, but that they might only be negatively affected by one specific type of gambling activity. Current measures do not appear to capture these specifics when asking gamblers about their behaviour.

There is also scope to investigate the role of the gamblers' self-narrative as an intervention for at-risk and problem gamblers. A key finding of the current research is that gamblers appear to make a natural adjustment in their self-identity and evaluation of gambling behaviour when changing from low to high problem levels of gambling behaviour. Reith and Dobbie (2012) have previously found that gamblers' narratives and self-concept form a crucial part in managing gambling behaviours. A pro-active approach to adjusting this self-narrative could be beneficial when attempting to bring about change, and would be a valuable area to explore for potential therapeutic benefits.

Conflict is a key factor identified by Orford (2001) as contributing to an addicted state. In the gamblers' narratives captured here, conflict arising from negative self-evaluation appears to create a spiral of behaviours, which then require further gambling engagement to achieve relief. Processes of change at the self-concept and conflict stage could be more beneficial than simply attempting to ask gamblers to control their gambling behaviour which is perhaps a symptom of that conflict. Alongside this, one interpretation of the implicit measure findings suggests that over confidence in gambling decisions is an unconscious process of which the individual may not be aware. This has also been established in previous research as a factor which relates to problem gambling (Hudgens-Haney et al. 2013). Whether or not a re-alignment of conscious awareness of misguided cognitive biases is possible is something that should be explored by further use of the implicit tasks here. This should be explored in conjunction with a conscious re-evaluation of previously intuitive decision-

making during gambling behaviour, to see if any effect can be made on some of the unconscious processes that appear to cause problems for gamblers.

Based on some of the interview data gathered here, for many gamblers the benefits of engaging in gambling behaviour, such as social aspects and dissociation, were achieved without engaging in the high risk, or high loss outcomes that produce such negative overall effects in gamblers' lives. This supports previous assertions that place such emotional benefits high in the priorities of gamblers, even if they do not overtly express these outcomes as their reasons for gambling (Orford, 2001; Wood & Griffiths, 2007). Exploring applications of this understanding, to enable problem gamblers to maintain the psychological and social benefits, without the harms would be of immense value to those individuals as well as others directly affected by their behaviour. What is needed is more understanding of how individuals can achieve the social and psychological benefits, without the potential harms, and to do this more needs to be done in terms of talking to gamblers about their feelings, emotional and social aspects associated with their existing gambling behaviours.

Finally, for many problem gamblers, the external infrastructure that maintains high levels of gambling behaviour through availability and positive association from a societal perspective needs to be challenged. This current view of gambling and the relaxing controls on participation as well as moral acceptance is an aspect of gambling that has recently been highlighted by Orford (2012). For many years there has been a focus on processes of change that centre on the individual (Prochaska & DiClemente, 1998). However, from talking to regular gamblers about their behaviours, it emerges that there are huge external pressures contributing to their levels of gambling involvement. In the face of which, and combined with some of the individual traits already highlighted, problem gamblers need more assistance than being simply told to stop. This requires working with more than the individuals who have problems, but also with the gambling infrastructure that currently exists.

## **7.10 General conclusions**

One of the key findings from the current research is that gamblers who experience problem levels of behaviour do so consciously. They acknowledge problem behaviours in themselves and identify themselves as problem gamblers during these stages. Often the problematic phases stem from a disorganised approach or conflicting attitudes toward gambling behaviours. Alleviation of these two elements is often all that involved in a reduction of self-ascribed problem gambling. This is not to say that the gambler is gambling less, or will not return to a state they consider problematic. But for that gambler, the re-evaluation of conflict, or a change in organisation of gambling behaviour, brings about change in self-evaluation and a qualitatively different life experience. That is an improvement. The qualitative change in self-concept improves the life of that individual, whether or not they are still prone to unconscious cognitive biases. Indeed, removing such unconscious cognitive biases may have no effect on the welfare of the individual if they continue to regard themselves in the context of conflict, or lacking the organisation required to frame their gambling behaviour in the same way they do other regular habitual behaviours which are not regarded as problematic.

Following the ‘decision-making’ type of processes that are focused on in the established Transtheoretical model of behaviour change, individuals are preoccupied with putting their individual decisions at the centre of behaviour change. This often leads to their ultimate failure to change, because the change process requires a much more complex interaction between individual resolution to change, combined with changes to their social structure and interactions with others on a personal level (Orford, 2001; 2012; Reith & Dobbie, 2012). As well as this, larger environmental changes affect the availability and frequency with which an activity can be engaged. Changes that then take place in a wider socio cultural understanding of the behaviour change the moral and epistemological understanding about an activity which filters back down to the individual making subtle changes in attitude that would

be impossible for the individual to produce on their own, should no other changes take place in that wider context (Anthony & Helzer, 1991; Orford, 2001; 2012).

The current research finds when adopting the top down qualitative approach that an identifiable, general pattern emerging from the twelve most changeable and problematic participants was that during their highest scoring phases or problem gambling, there was greater reference to all factors contributing to movement further into gambling behaviour. These included environmental, social and moral contributions, encouraging, supporting or facilitating further gambling behaviour.

This suggests that these factors play a large part in the individuals' perceptions of gambling facilitation, even if the individual is not consciously ascribing much value to such factors when considering the effect they have on behaviour change. During interview, those gamblers who express the desire to change refer mostly to changes they are making or attempt to make as individuals (see Chapter Six). They talk about the personal levels of control and decision-making that leads them in or out of problematic behaviour, with little weight of importance in the roles played by their social groups and peers (Gupta & Derevensky, 1997), or the wider moral context within which gambling is viewed (Orford, 2012). The majority of these external factors are referred to frequently, but not under the conscious acknowledgement that they are facilitating negative gambling behaviours, or responsible for the ultimate decision as to whether one gambles or not.

The one area that is noticeable amongst external facilitators, to whom the gamblers direct some attention, is the gambling establishment. There is a degree of mistrust and dislike directed towards the profit making gambling institutions; that they are deliberately ignoring the associated problems of gambling in the face of increased profits. Amongst the participants involved in this research there was a degree of feeling that more duty of care should be taken by those who profit from gambling participation. At the present time the duty of care appears

to stop at reminding problem gamblers that they have a choice in their behaviour and should choose to control it (self-exclusion – Gambling commission codes of practice 2015).

Many researchers agree that the most useful way to view addiction is moving away from a disease concept (Hyman, 2007; Orford, 2001; Davies, 1997). The current research reveals a complex relationship between conscious systems of behaviours and implicit unconscious systems. By using a combination of approaches which tap into both conscious self-report and unconscious implicit processes there is a greater prediction of problem gambling than by using any one method. Furthermore, when examining change, we find that the self-narrative of problem gamblers reveals more about the construct of behaviour change for individuals than can be found by relying on other measures. This is in line with dual processing models of behaviours, particularly relating to behaviour change and addiction (Wiers & Stacy, 2006; Borland, 2013). Such contemporary theories of behaviour change acknowledge the difficulty individuals have in instigating and then maintaining behaviour change in the face of addictive behaviours.

It is suggested by Borland (2013), that the way to adapt to new behaviours, out of and away from addictive behaviours requires more than an individual's conscious decision to do so. Changes toward such hard to maintain behaviour require developing a range of factors which include new favourable alternatives, social support, alternate reward paths and change to the active encouragement and facilitation of unwanted behaviours by moral and physical environments that the individual may find themselves in.

The strong implications of social associations with gambling, both in facilitation and reward, suggest that one route for future treatment should be to introduce alternate personal and social skills, to be taught in dealing with emotional situations that trigger gambling. Also interventions that aim to develop gamblers' social groups beyond their immediate gambling peers would be helpful. Wood and Griffiths (2007) discovered that some gamblers are socially rewarded for gambling. Alternate personal and social skills should be taught in dealing with

emotional situations that can trigger gambling; also interventions that aim to develop gamblers social groups beyond their immediate gambling peers would be helpful. If this is the case then testimonials from successfully recovered gamblers would provide positive outcomes and achievements to focus on (Reith & Dobbie, 2012). Additionally, in a society that acknowledges problem behaviour, the shift in emphasis should be towards the many external influences that play a significant part in an individual's ability to change their behaviour, with less of the blame for failure to change laid at the individual.

In conclusion, problem gambling and changes to gambling behaviours are complex. They require the full gambit of contemporary theory and methodological applications in order to develop new understanding. The current research has demonstrated that combining mixed methods, and incorporating various approaches and theories when explaining behaviour and change, give us greater insight into gambling behaviour than any one approach can do.





## Appendix 1

### POA sequences

Experimental Trials	Code	POA
<b>Sequences ending with a run of three blacks</b>		
black/black/black	blend_4	0
red/red/red/black/black/black	blend_6	0.2
black/black/black/black/black/red/red/red/red/black/red/red/red/red/black/black/black	blend_23	0.235
red/red/red/red/red/black/black/black/red/black/black/black	blend_15	0.273
black/red/red./red/black/black/black/black/red/black/black/black	blend_27	0.364
red/red/black/red/red/black/black/black	blend_9	0.429
red/black/black/red/red/red/red/black/red/black/black/black	blend_2	0.455
black/red/red/black/red/red/black/black/black/red/red/red/red/black/red/black/black/black	blend_3	0.471
black/black/black/red/black/red/black/red/black/black/black/red/black/red/red/black/black/black	blend_30	0.588
red/red/black/red/black/red/red/black/red/black/black/black	blend_11	0.636
<b>Sequences ending with a run of three reds</b>		
red/red/red	rend_5	0
black/black/black/red/red/red	rend_32	0.2
black/black/black/black/black/red/black/black/black/red/red/red/red/red/black/red/red/red	rend_22	0.235
red/black/black/red/red/black/red/red/black/red/red/red	rend_25	0.272
black/red/red/red/red/red/black/black/black/red/red/red	rend_28	0.364
black/red/black/black/black/red/red/red	rend_10	0.429
black/black/black/black/red/black/red/red/black/red/red/red	rend_7	0.455
black/black/black/red/black/black/black/red/red/black/black/red/red/red/black/red/red/red	rend_18	0.471
red/black/red/black/red/black/black/red/red/red/red/black/red/red/black/red/red/red	rend_31	0.588
red/red/black/black/black/black/black/red/black/red/red/red	rend_14	0.636

## **Appendix 2**

Interview Transcripts on CD

### Appendix 3

Qualitative analysis initial coding. Codes identified and named, along with the number of different sources (interviews) and references to the named code in the transcripts of all participants.

Table A3.1: Complete list of identified Nodes, number of sources and references to each node from the transcripts

Code Name	Sources	References
accepting or dismissing losses	17	30
admitting loss	17	33
annoyed by others	2	3
aware I can lose control	12	46
belief that mostly winning	2	2
betting on what you know	8	11
binge gambling	2	4
change	9	27
changing view on gambling	15	29
chasing losses	15	22
confident about gambling	5	10
constant gambling	6	10
contradiction	2	5
control	21	46
depression	3	4
different gambling for different reasons	9	24
dislike gambling	10	13
disorganised	13	19
dissociation	6	10
early experience	2	3
early win	8	11
easy access	7	9
escape dissociation	5	7
external restraint ignored	1	1
external restrictions	4	5
facilitated by industry	4	5
fallacious beliefs	17	46
family approval	14	27
family encouragement early years	6	8
family restriction	8	9
feelings are important	4	8
Fixed odds betting terminals	6	16
forgetting or ignoring the losses	1	1

free choice	3	4
future plans none	7	7
gambling affects mood	3	4
gambling for the sake of it	6	9
gambling frequency high	10	13
gambling involvement high	15	18
gambling involvement low self-estimate	1	2
gambling is fun	9	15
gambling less	16	40
gambling less than others	7	9
gambling more	13	26
gambling with friends	12	23
generally winning	3	6
getting a buzz	9	13
glad I've stopped	1	1
habits and superstitions	9	12
happy with gambling	4	4
I have an addictive personality	3	3
identifying others as problem gambler gamblers	15	28
identifying self as gambler	8	12
I'm an average gambler	3	3
influenced by boredom	8	11
influenced by environment	16	25
influenced by external factors	12	20
influenced by friends	10	11
influenced by money	20	44
influenced by mood	6	9
influenced by odds	7	10
influenced by relationship	1	1
influenced by time	4	5
interested in the sport	2	2
irrational explanation of behaviour	1	1
it's not hurting anybody	1	1
just the way things are	6	8
knowledge of gambling policy institution rules	4	4
lack of external controls	3	3
limits money	9	14
limits money none	5	5
limits money vague	14	22
limits time none	9	10
limits time vague	4	4
lonely	1	1
looking without betting	1	1
losing control	5	11
lucky	4	10
memorable loss	2	2
memorable win	7	7

mistrust dislike of gambling institutions	9	28
mood is bad	10	15
mood is good	12	24
more enjoyment from less gambling	4	9
mostly winning	5	10
motive free incentive	1	1
motive winning	11	18
near miss	4	7
negative life changes	1	1
no control	5	7
not really gambling or a gambler	4	8
not winning much	5	6
online betting	9	17
organised	12	21
origins family	1	1
positive life changes	4	4
preoccupied by gambling	1	1
rational beliefs	2	2
realising there's a problem	8	13
reflection considering negative effects	7	17
regret	12	26
rejecting encouragement to gamble	1	1
routine	3	6
seeing patterns	5	5
seeking help	2	2
self-acceptance	6	8
self-destructive	2	3
self-reflection	13	26
self-reported change	4	5
single gambling activity	2	3
skills and strategies	17	40
social acceptance	6	7
social betting	11	24
social restraint	1	1
social status through gambling	1	1
solitary betting	13	16
spending more	1	6
spending winnings on something else	6	6
spontaneous	11	11
stability	9	19
to be honest...	2	2
unlucky	1	1
unusual home life	1	1
using gambling to create interest in sports	5	7
wanting to raise issues with gambling	1	2
winning is achievement, takes skill	3	4
won't go back to gambling	1	2

The codes were then grouped into themes which encompassed the essence of codes which were related conceptually. Each group of codes was given a theme name. These can be seen in tableA3. 2.

Table A3.2 Codes grouped into themes

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<b>External influence/ Facilitation</b>
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Influenced by external factors lack of external controls
<b>Industry</b>
easy access external restrictions facilitated by industry mistrust dislike of gambling institutions knowledge of gambling policy institution rules influenced by odds influenced by environment
<b>Family</b>
family approval family encouragement early years origins family early experience early win family restriction
<b>Social</b>
gambling with friends influenced by friends influenced by relationship social acceptance social betting social restraint social status through gambling rejecting encouragement to gamble

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## **Disorganised behaviour**

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disorganised

### **Loss of control/lack of restraint**

aware I can lose control  
binge gambling  
chasing losses  
losing control  
no control  
limits money none  
limits money vague  
limits time none  
limits time vague  
external restraint ignored  
accepting or dismissing losses  
forgetting or ignoring the losses  
future plans none

### **Habitual gambling**

constant gambling  
spontaneous  
routine  
gambling for the sake of it  
habits and superstitions  
preoccupied by gambling  
just the way things are

### **Two types**

different gambling for different reasons

### **Fallacious beliefs**

fallacious beliefs  
belief that mostly winning  
confident about gambling  
betting on what you know  
gambling frequency high  
gambling involvement high  
near miss  
lucky  
winning is achievement, takes skill  
skills and strategies  
generally winning  
seeing patterns  
irrational explanation of behaviour

### **Dissociation**



getting a buzz  
gambling affects mood  
feelings are important  
dissociation  
escape dissociation

---

### **Self-narrative/reflection/perception**

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self-reflection

#### **Positive self-narrative**

mood is good  
free choice  
gambling involvement low self-estimate  
happy with gambling  
positive life changes  
glad I've stopped  
self-acceptance  
gambling is fun  
generally winning  
mostly winning  
memorable win

#### **Negative self-narrative**

regret  
admitting loss  
reflection considering negative effects  
depression  
future plans none  
mood is bad  
self-destructive  
I have an addictive personality  
realising there's a problem  
negative life changes  
lonely  
not winning much  
memorable loss  
unlucky

#### **Creating a gambling identity**

identifying self as gambler  
I'm an average gambler  
interested in the sport  
it's not hurting anybody  
not really gambling or a gambler  
using gambling to create interest in sports

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identifying others as problem gamblers  
gambling less than others

**Motives**

motive free incentive  
motive winning

**Individual factors**

influenced by boredom  
influenced by money  
influenced by mood  
influenced by time

---

**Conflict**

---

aware I can lose control  
contradiction  
dislike gambling  
realising there's a problem  
seeking help  
wanting to raise issues with gambling

---

**Organised behaviour**

---

control  
organised  
looking without betting  
single gambling activity  
rational beliefs  
stability  
spending winnings on something else

---

**Change**

---

change  
changing view on gambling  
glad I've stopped  
gambling less

---

---

realising there's a problem  
more enjoyment from less gambling  
won't go back to gambling  
self-reported change  
positive life changes  
spending more  
gambling more

---

## **Appendix 4**

Narrative summaries of each of the 12 key participants.

### **Participant 7: Narrative towards PG**

Demographics;

Age; 19. Sex; Male. Relationship Status; Single.

Employment Status; Full time Education. Ethnicity; Asian- Asian British. Education; 14 years

Past year gambling activities; 9

Participant 7 (Male, 19) attended two sessions. Their lowest PGSI scoring session was the first session with a score of 7, and the highest was the second with a score of 10. Therefore, they follow a pattern of moving into higher levels of self-reported problems. The self-reported levels of PGSI, Dissociation, Fallacious Beliefs and past week gambling engagement are shown in table A4.1.

Participant 7 (Male, 19) is a male undergraduate student in the North east of England. Originally from Hong Kong, where there is strong link to gambling, they developed their gambling with family approval often using his father's account with a bookmaker to facilitate gambling before the age of eighteen. His current main interest in football betting, but also engages regularly in casino table top games.

Table A4.1 Participant 7 (Male, 19) key self-report measures across sessions

Session	PGSI	Past Week	Money	Time	Dissociation	Fallacious Beliefs
1	7	3	50	8.2	16	24
2	10	1	30	7	13	23

### Interview One

In the first interview, Participant 7 (Male, 19) clearly reports most of his activities as shared with friends linked to social activities or out of boredom. Most of his friend's gamble, and between them they see it as a good enjoyable social pastime. Comparing the U.K. to Hong Kong, he finds the lower stake bets in casinos allow him to engage in regular gambling at less overall cost, and the freedom to go gambling without the supervision of his father less restricting. He also reports lying about his gambling to his parents.

He limits himself by money rather than time, but instead of limiting an overall spend or loss, he sets a goal to win £60. The majority of his focus during interview was on the motive of winning and gambling as a fun, social activity. He also reports a degree of understanding odds and probabilities for different gambling activities; however most of this was misguided (fallacious beliefs).

### Emerging sub themes:

Social gambling.

Parental facilitation.

Paradox/conflict.

Fallacious beliefs.

Winning as motive.

## **Interview Two**

During the second interview the majority of focus during the interview was on chasing losses and regret regarding gambling activities. There was also a high degree of reference to the facilitation of the gambling environment as an encouraging factor in his gambling behaviour. Influences such as friends and the desire to win money were also prominent.

Overall increased gambling activity, blamed directly on promotional activities in local casinos was the main topic, but whilst increasing involvement, the lack of money meant less overall spending. Other main influences were the prevalence of football games to bet on.

There is a strong feeling of control and enjoyment waning during this interview a sense of desperation and regret at losses, lack of money and lack of control.

### **Emerging sub themes:**

Facilitation by institution/ environment.

Negative mood.

Negative self-evaluation.

Loss of control.

### **Participant 12 (Male, 19); narrative away from PG**

Demographics;

Age; 19. Sex; M. Relationship Status; Single

Employment Status; Full time Education. Ethnicity; White – White British. Education; 14 years

Past year gambling activities; 12

Participant 12 (Male, 19) attended four sessions. Their lowest PGSI scoring session was the fourth session with a score of 3, and the highest was the second with a score of 8. They are a university student, regularly gambling on football in a social setting.

**Table A4.2 Participant 12 (Male, 19) session key self-report measures across sessions**

Session	PGSI	Past Week	Money	Time	Dissociation	Fallacious Beliefs
1	7	8	10	3.75	12	25
2	8	5	20	4	12	22
3	5	1	15	2	9	18
4	3	4	15	1.5	5	22

### **Interview One**

Recording failed after 3 minutes without the participant speaking.

## **Interview Two**

Strong references to fallacious beliefs and having specific skills and strategies dominate the interview. Environmental influences, particularly accessing online betting have contributed to an increased spend on gambling during the last period. This has been approved by family and friends, who originally made the suggestions to go online using the gambling websites' invite system.

There is an acknowledgement of overall losses during this period and some regret over rapid losses in casinos. However, there is also an expectation of this being part of some unidentified pattern from which they will emerge. When discussing either positive or negative effects from gambling, the focus has been predominantly on the negative, regret at losses and lack of control.

### **Emerging sub themes:**

Fallacious beliefs.

Social facilitation.

Environmental facilitation.

Negative mood/ Self-evaluation.

## **Interview Three**

Between the second and third session Participant 12 (Male, 19) has moved back to his family home, leaving university for the summer. During the third session gambling is talked about as being reduced compared to previous interviews. The main influence on the reduction is stated as being lack of money and other external influences such as changes in the football season, rather than choice. When gambling is engaged it is a disorganised, spontaneous, solitary activity and often simply for the sake of it, rather than planned and specific.



Reference is made to having no fixed limits, only ever relying on availability of money and time to determine gambling involvement. But that overall a reduction in gambling has been recognised for this period. Participant 12 (Male, 19) expects that this will change in the coming months when he returns to University, has more money available and the football season starts again, giving him more opportunity to engage in his preferred gambling activity.

### **Emerging sub-themes:**

Situation change.

Influenced by money.

Disorganised.

### **Interview Four**

Participant 12 (Male, 19) acknowledges that they have increased their gambling involvement since the last session. This is largely due to having more money. The number of different activities engaged in has increased. There is a general positive feeling to the fourth session interview. Reference to generally winning, betting on activities that they know well, and being selective based on odds. However, there are also leaning towards fallacious beliefs and skills and strategies that are misguided.

Gambling activities are often social and used as means of dissociation from work. There is a more relaxed approach to gambling, aware that decisions are made without too much preparation or planning, dispensing with rigid systems that may have been used in the past. Gambling is viewed as a fun activity which they will continue to enjoy and that their skills will improve over time.

The social element is strong factor in increased enjoyment and the more relaxed approach, and an expectation that gambling will continue as an enjoyable activity which they will develop skill in as they continue.

### **Emerging themes:**

Influenced by money.

Mood positive.

Social influence.

### **Participant 16 (Male, 21) narrative stable PG (slight change towards)**

Demographics;

Age; 21. Sex; M. Relationship Status; Single

Employment Status; Full time Education. Ethnicity; White-White British. Education; 16 years

Past year gambling activities; 12

Participant 16 (Male, 21) attended two sessions. Their lowest PGSI scoring session was the first session with a score of 13, and the highest was the second with a score of 14. Session 1 placed the participant as a high problem gambler.

**Table A4.3 Participant 16 (Male, 21) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	13	7	60	5	20	20
<b>2</b>	14	7	40	2	17	18

### **Interview One**

Participant 16 (Male, 21) s account of their gambling to date includes many references to the ease with which they can access gambling, and how they can be influenced by the gambling environment. There is also a strong link to family and social approval.

In terms of specific gambling behaviour, it is largely spontaneous, and disorganised. There are references to lack of control through chasing losses and acceptance of their gambling behaviour as simply an expected part of their daily routine.

There is a lack of limits to either time or money, no apparent external control, including friends or family, who appear accept the gambling behaviour. The overall tone of the interview is that gambling is a casual, fun activity, talking about winning and the social benefits that go along with it.

However, mood is occasionally referred to as being bad in conjunction with gambling, and there is a strong element of mistrust or dislike for the gambling institutions.

Fallacious beliefs and dissociation are also both referred to in the account.

### **Emerging sub-themes:**

Disorganised.

Social gambling.

Mood negative.

Paradox.

### **Interview Two**

Session 2 placed the participant as a high problem gambler. The predominant feature of this session is the participant's change of view towards gambling. There is reference to an awareness of loss of control during gambling tasks, and self-identification as a problem gambler, and realisation that there is a problem. They have banned themselves from the local casino and predominantly play online. They admit loss over the preceding few months. They also openly notice and identify others as having gambling problems. In comparison to other gamblers they view themselves as being low level gamblers, but high compared to friends.

There continues to be an element of social pressure and social status achieved through gambling. Whilst they continue to struggle with some of the key elements of gambling, such as the negative mood effects, social pressures and constantly winning, they also view it as something they will never stop doing.

The mood associated with gambling continues to be negative, but an effort is being made in terms of reducing gambling involvement and limiting money. However, they still refer to making extravagant bets on occasions.

There is a reduction in both time and money in the self-reports for this session, and both dissociation and fallacious beliefs. However, they identify themselves as having more gambling problems on the PGSI.

**Emerging sub-themes:**

Aware I have a problem.

Taking control.

### **Participant 27 (Male, 20) narrative away from PG**

Demographics;

Age; 20. Sex; M. Relationship Status; Single

Employment Status; Full time Education. Ethnicity; White – White British. Education; 15 years

Past year gambling activities; 12

### **Summary**

Participant 27 (Male, 20) attended four sessions. Their lowest PGSI scoring session was the fourth session with a score of 3, and the highest was the second with a score of 9. They move up in self-reported PG from the first to second sessions, but then there is dramatic reduction in self-reported PG from second to third session, with a slight reduction from third to fourth as shown in table A4.3

**Table A4.4 Participant 27 (Male, 20) session key self-report measures across sessions**

Session	PGSI	Past Week	Money	Time	Dissociation	Fallacious
1	6	7	15	1	13	18
2	9	6	15	2	9	19
3	4	0	15	1	10	17
4	3	3	10	0.5	12	18

### **Interview One**

The first interview is dominated with a sense that gambling is a fairly stable activity that is engaged with mostly with friends as a means of social interaction. Largely influenced by boredom and disorganised with vague limits regarding money and none regarding time. There

is strong reference to the emotional effects that gambling has, when winning – positive, or losing – negative.

There are some mixed signals regarding the acceptance of gambling from family, with one parent evidently against gambling, while the other is ambivalent.

### **Emerging sub-themes:**

Gambling affects mood.

Disorganised.

Social facilitation.

Paradox/Conflict.

### **Interview Two**

There is reference to gambling less by Participant 27 (Male, 20) in the second interview. This does not correspond to the self-reported activity levels. There continues to be strong references to the social element of gambling, but much of the talk is admitting losses and being limited by lack of money due to losses, leading to apparently less gambling overall.

Although Participant 27 (Male, 20) engages in more than three different types of activities in a typical week, they do not regard this as particularly high levels of engagement. At 6 different activities in the past week, they are actually amongst the highest levels of engagement of any participant, and recognised as high risk by the BGPS (2010).

There is a general lack of enthusiasm towards gambling as a pastime. It is more accepted as a casual activity, but there is no mention of it being particularly enjoyable, or distressing, more a fairly neutral activity that is engaged spontaneously with little planning or forethought. Limits are mentioned, but the most memorable loss was achieved by going far above the attempted. (£60 lost, £20 weekly limit)

**Emerging sub- themes:**

Narrative change.

Ambivalence toward gambling.

Influenced by money.

Social facilitation.

Disorganised.

**Interview Three**

There is quite a lot of reference to gambling less than in previous sessions, this is often contradicted by statements suggesting that nothing has changed and everything is stable. However, the money limit mentioned has changed from £20 per week, to £10 per week, although the participant does not seem to recognise this as being lower than in previous sessions. They seem happy with their levels of gambling, and largely justify this by comparing their gambling levels to others they either know personally, or imagine to be typical gamblers.

Again the predominant reason for gambling is social and to alleviate boredom. Whilst a degree of planning is involved, gambling decisions are largely spontaneous and disorganised. A lack of any significant wins or losses, with an overall general acceptance that generally losing is the typical outcome.

The self-reported reduction in gambling involvement is replicated in the dramatic reduction in weekly activities to zero in the past week – however as the participant continues to report the same average weekly expenditure in time and money as previous sessions there is some degree of ambiguity.

**Emerging sub-themes:**

Paradox/ conflict.

Gambling and mood.

Social gambling.

Acceptance of negative outcomes/loss.

**Interview Four**

Again there is a sense during the interview that Participant 27 (Male, 20) is reducing their gambling involvement. There is an acceptance that they generally lose and there is little logic to some of the gambling decisions, or outcomes they experience.

The social element of gambling with friends and watching a football game is the main reason for gambling and enjoyment that they experience when gambling. There is a reduction in gambling involvement. The different types of gambling activities have reduced quite dramatically since the initial interviews. There is a mix of planned and spontaneous activities. The social gambling is a regular planned activity, and solitary spontaneous activities such as online roulette also occur, but with less emphasis. There is still a vague limit on money, which is occasionally exceeded, for reasons such as having extra money available, or social influence.

There appears to be a change in parental acceptance of gambling activities, initially the participant's mother was against gambling, but during the last period she has purchased lottery tickets on their behalf, and the participant seems to be aware of this as acceptance of their behaviour. Their personal attitude is that their gambling activity and enjoyment is fine, enjoyable as a social activity, generating good healthy social experiences and causing no concern or problems.



**Emerging sub- themes:**

Disorganised.

Accepting loss.

Social influence.

Gambling mood is positive.

Change in parental facilitation.

## **Participant 29 (Male, 19) narrative away from PG**

Demographics;

Age; 19. Sex; M. Relationship Status; Single

Employment Status; Full time Education. Ethnicity; White- White British. Education; 14 Years

Past year gambling activities; 9

Participant 29 (Male, 19) attended two sessions. Their lowest PGSI scoring session was the second session with a score of 2, and the highest was the first with a score of 7.

**Table A4.5 Participant 29 (Male, 19) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	7	5	16	3	12	18
<b>2</b>	2	4	20	3	11	18

## **Interview One**

The first session has a general feeling of gambling as being a fun activity, with good mood associated with gambling and achieving a buzz from playing. There is a strong sense of family approval towards gambling, and gambling with friends as a social activity. Attending football matches started at an early age with their father and gambling on sports was something they were aware of from this early age. Their first gambling experience was facilitated by their father who placed the bet for them. Gambling on sports is used as a means to add interest to the game, and seen as something that is normal and accepted, almost expected. However, he states that his mother disapproves.

However, there is also reference to realising that they might have a problem, that they sometimes chase losses and are making an effort to control their gambling. They feel that they are gambling less than they have at previous times, because of loss of control in the past, being more aware of limiting their money. They present some fallacious beliefs, particularly with roulette games.

### **Emerging sub-themes:**

Positive mood.

Social gambling.

Family approval.

Aware I can lose control.

### **Interview Two**

There is a distinct change of view towards gambling during this session. The participant refers to gambling less and demonstrating more control. There is more emphasis on limiting money and controlling their gambling behaviour, than on thinking they have a problem. They believe that they are mostly winning, with no memorable losses.

However, this is not demonstrated in quantitative measures of self-reported time or money spent, where the money has actually increased. The only reduction is in the number of different activities, from five to four, in the past week.

They claim to be gambling less primarily due to the change in the football season. There is a slight contradiction from the previous session, where he previously stated that his mother disapproved of gambling behaviour, but here he states that he places her lottery tickets for her.

He appears to be re-evaluating his gambling behaviour, there is strong reference to the futility of it, and that he occasionally questions why he frequents gambling establishments. His view

seems quite rational in respect to losses, but this contradicts his previous statements which refer to winning overall during the last period.

He seems to consider that he is much more controlled, no longer gambling to excess, which appears to be the underlying message from past behaviour. That his gambling is social and fun, with no adverse effects. His view is quite negative towards gambling in places, that it is not going to win anybody any money.

The tone of this session is very much that Participant 29 (Male, 19) believes they have made a change in their approach and view of gambling, but there are several points at which they contradict themselves with incompatible views.

**Emerging sub-themes:**

Re-evaluation.

In control.

Positive mood.

### **Participant 30; narrative toward then away from PG**

Demographics;

Age; 74. Sex; M. Relationship Status; Single

Employment Status; Retired. Ethnicity; White – White British. Education; 12

Past year gambling activities; 6

Participant 30 (Male, 74) attended six sessions. Their lowest PGSI scoring session was the sixth session with a score of 5, and the highest was the fourth with a score of 11. Their self-reported PG changes throughout the sessions, fluctuating from moderate scores of 7 or 6 to high scores to 11 in the middle session, returning to lower scores in the later sessions.

**Table 6.5.6 Participant 30 (Male, 74) key self-report measures across sessions**

Session	PGSI	Past Week	Money	Time	Dissociation	Fallacious
1	7	5	25	21	16	19
2	8	5	25	21	19	19
3	6	5	40	35	16	20
4	11	5	40	28	16	22
5	7	5	55	36	17	21
6	5	6	35	40	17	20

## **Interview One**

Participant 30 (Male, 74) talks a great deal around the subject of gambling and the questions asked. But this offers an insight into the way they view their gambling, the reasons behind them gambling and the way it fits within their life and comparisons to others who they frequently interact with in gambling environments. They are quite reflective and aware of their feelings with regard to past gambling experiences and life experiences in general. They refer quite frequently to the importance of feelings during gambling activities. Gambling activity is predominantly a solitary pastime, but the majority of their gambling takes place in bookmakers, amongst other gamblers. They interact with gamblers, but are quite judgemental and disapproving of a lot of the habits and decisions made by others.

Participant 30 (Male, 74) quite explicitly refers to their gambling as an outlet. They openly discuss past life experiences which have led to negative emotions, and in turn refer to gambling as an outlet to some of these emotions. There is an overall sentiment during the interview of quite negative emotions, and feelings towards significant relationships and negative interactions with other people on a regular basis. They do not categorise themselves as a serious gambler, or as having any problems. However, they do gamble almost every day, predominantly on horses and roulette machines in bookmakers, with a misguided sense of probabilities and allusion to gamblers fallacy.

### **Emerging themes:**

Self-reflection.

Negative Emotions/mood.

Solitary gambling.

Fallacious beliefs.

## **Interview Two**

The general attitude here is repetitive suggestions that the participant is not a 'real' gambler. Mainly due to the low amounts he places when betting. But this is also combined with regret at what he considers near misses or over all losses, caused by lack of confidence when betting. He has a strong belief in systems, strategies and skills, of which he believes he possesses quite a few. But there is a generally negative approach to reflection on occasions even when he is winning, due to the lack of confidence he has demonstrated.

Whilst there is reference to the influences of environment, promotional offers and other aspects including systems and odds, he is clear that he believes any gambling decision he makes is his own, and win or lose he is content that he has made his choice wisely. This is of course contradictory to the negative regrets he continually brings up.

He constantly contradicts himself with regard to how he feels about other, generally annoyed by most people he comes into contact with during gambling exchanges, but he claims that meeting and talking to people is one of his great interests.

Throughout this interview, contradiction and instability in his beliefs about both his gambling and his life view seem to be apparent.

### **Emerging sub-themes:**

Gambling identity.

Fallacious beliefs.

Regret.

Paradox/conflict.

### **Interview Three**

The general feeling throughout this interview is very positive. Participant 30 (Male, 74) reports a qualitative shift in their feelings and approach to gambling in general. Mostly winning, and feeling confident about their gambling choices and behaviours.

They continue to identify others as having problems and to be critical of others gambling behaviours. There is less general conversation regarding external elements in their life, but a distinct sense of restlessness and dissatisfaction with their routines and regular acquaintances. There is also a degree of self-reflection, an awareness of lack of control (specifically chasing losses) in the past, and strategies put in place to prevent similar mistakes being made now.

Gambling attitude is positive, confident and controlled. However, there is regular reference to fallacious beliefs and contradictions in statements regarding probability, both personally and when directing judgement toward others.

#### **Emerging sub-themes:**

Mood positive.

Self-reflection.

Fallacious beliefs.

### **Interview Four**

Participant reports gambling more, with larger stakes. But credits this to feeling more confident about winning, expecting to win rather than hoping to win. There is still an emphasis on the feeling behind whether a bet should be placed or not, and the importance of feelings in the success of the outcome.

There is a large proportion of the interview where the opportunity is taken by the participant to discuss regrets from his life, his loneliness and fantasising about what life might have been, or even what it might be with a big gambling win. There is a great deal of dissatisfaction at



his current personal situation, while he clearly has family and still has contact with them, he is lonely and unhappy at the situation he finds himself in.

He has begun to make a concerted effort to avoid gambling situations that might lead him into chasing or betting on activities where he knows he has a problem. Which is difficult to equate with the repeated references to good fortune which he seems to be claiming.

**Emerging sub-themes:**

Depression/Life dissatisfaction.

Positive about gambling.

Gambling more.

Mood influences.

Regret.

Paradox.

**Interview Five**

Participant 30 (Male, 74) continues to talk frequently about life circumstances which affect his view on life; although during this session the mood is generally positive even when discussing elements that he is unhappy about.

He appears to have a change of view regarding some of his gambling activities, demonstrating more control. He has also decided to put away his winnings, rather than putting the money back into gambling. He continues to talk about the strategies he uses with a degree of fallacious beliefs.

He also claims to be winning frequently and placing more money on the bets he does make.

**Emerging sub-themes:**

Control.

Mood positive.

### **Interview Six**

This is participant 30's lowest scoring PGSI interview. Although in terms of involvement, money and time spent, there is little difference between this a previous high scoring PGSI interviews, and compared to other occasions it remains one of the highest scoring session across other measures, despite low self-reported problem gambling.

The participant has achieved some large wins compared to his usual gambling outcomes, and believes he has demonstrated control and walking away without losing the winnings. He refers back to chasing losses in the past as something he greatly regrets, and would not do now. He continues to invest his winnings on items or activities that he can enjoy.

There is strong reference during this session to a mistrust of gambling institutions. A dislike particularly of Fixed Odds Betting Terminals.

Personally there is reference to feeling lonely and using gambling as a means of escape or dissociation from personal problems. There is general negative mood and depression element to the colour of the conversation, but a clear opinion that gambling is his only alleviation from a bad mood.

### **Emerging sub-themes:**

Self-evaluation/Regret.

Dissociation.

Mistrust of gambling institutions.

**Participant 34 (Male, 34) narrative stable PG (slight movement away)**

Demographics;

Age; 34. Sex; M. Relationship Status; Other

Employment Status; Paid Work. Ethnicity; White-White British. Education; 13

Past year gambling activities; 13

Participant 34 (Male, 34) attended two sessions. Their lowest PGSI scoring session was the second session with a score of 8, and the highest was the first with a score of 9. Session 1 placed the participant as a high problem gambler.

**Table A4.7 Participant 34 (Male, 34) key self-report measures across sessions**

<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>9</b>	13	500	35	12	13
<b>8</b>	13	350	20	11	13

Participant 34 (Male, 34) dominates their session with discussion of their dislike of Fixed Odds Betting Terminals, the mistrust of gambling establishments and establishments using FOTBs unethically. One of the reasons for them agreeing to take part in the research was to raise issues of FOBTs. They report that FOBTs lead them to spend more money than they otherwise would. Usually planning certain bets on horses or at the casino, but finding access to FOTBs in this places encourages reckless spontaneous play, that wouldn't have otherwise happened.

They are constant gamblers, engaging in several hours of gambling activities as part of their daily routine. They demonstrate losing control, no limits to either time or money and

disorganised gambling. Their pattern of behaviour is regular, occurring every day, and they regard it as uninfluenced by mood or other factors.

However, from further discussion family and social influences, including friends, actively encourage gambling participation. From an early age, their father would involve them in gambling activities and send them to the bookmakers to place bets.

Participant 34 (Male, 34) at one time took a job in a casino in order to be forced to curb his casino attendance on the basis that if you work in a casino you cannot frequent casinos for gambling.

### **Emerging sub-themes:**

Mistrust of gambling establishments.

2 types of gambling.

Family approval.

Disorganised.

### **Interview Two**

The dominant discussion in the second interview is around the subject of FOBTs. The participant has recently watched a documentary which has highlighted some of the issues regarding such gambling. He has personal anecdotes which contribute to his new consideration of these machines, and suggests that he has a strong dislike for them and it is one of the areas he wants to stop gambling on. However, he still admits to using the machines and seems to have a degree of conflict about the negative aspects, alongside the quick way in which he sees them potentially offering cash prizes.

He is extremely disapproving of certain policies and strategies in gambling establishments that exploit the use of FOTBs and the nature of gamblers, including himself, who frequent gambling establishments.

He refers very much to the stable nature of his gambling, compared to the last session, he seems to think there is no change, and however both time and money have dropped by 30-40% since the last session. He is scoring slightly less on PGSI, although still in the category of PG. He doesn't seem to regard himself as a problem gambler, rather that his gambling is stable and part of a matter of course. He does acknowledge some issues of control, but relates these solely to FOBTs.

He claims to be quite organised in his approach to gambling, with skills and strategies that he follows, but the sheer number of weekly activities he engages in suggest him to be highly disorganised, as he does not specialise or appear to have a clear preference for an activity on which he has developed a consistent level of gambling. Both time and money do not appear to be restricted in any way, other than when either runs out.

Again, his approach to gambling is full of contradictions. His expenditure, frequency and involvement in gambling are amongst the highest levels of any participant. However, his attitude is quite accepting of his personal involvement, but critical of the institutions which facilitate problem levels of gambling.

**Emerging sub-themes:**

Disorganised.

Paradox.

Mistrust of gambling establishments.

2 types of gambling.

### **Participant 35; narrative away from PG**

Demographics;

Age; 47. Sex; M. Relationship Status; Single

Employment Status; Unemployed. Ethnicity; White- White British. Education; 11

Past year gambling activities; 6

Participant 30 (Male, 47) attended two sessions. Their lowest PGSI scoring session was the second session with a score of 5, and the highest was the first with a score of 9.

**Table A4.8 Participant 30 (Male, 47) key self-report measures across sessions**

Session	PGSI	Past Week	Money	Time	Dissociation	Fallacious
1	9	5	40	14	20	14
2	5	1	6	1	14	16

### **Interview One**

During this initial session the participant makes strong reference to their mistrust of gambling institutions and particularly their dislike of Fixed Odds Betting Terminals (FOBTs). They are constantly gambling, seven days a week, with little control, or frequently losing control, such as chasing losses. They consider this their routine, with no changes affected by external influences.

However, they do refer to the influences of the gambling environment they find themselves in and the ease of access at vulnerable times, such as on the way home from the pub. Their family

has been very influential in encouraging and influencing gambling behaviour, starting at a very young age being asked to frequent the bookmakers to place bets on behalf of their father.

They make no claim to having any skills or strategies, the gambling they undertake has largely a social aspect, meeting friends in the same bookmakers every day.

### **Emerging sub-themes:**

Mistrust of gambling institutions.

Environmental influence.

Family influence.

Disorganised.

Social gambling.

### **Interview Two**

There is a dramatic change in gambling involvement for this session. The participant has begun a relationship, which has according to him changed his views on gambling and the value of the money he used to spend. He reports gambling significantly less, although he still does gamble. The self-reported number of gambling activities, time and money spent has all been reduced in accordance with this. He also mentions a very large rapid loss of £500 pounds which happened several weeks earlier, and refers to his vehement anger at losing now. He regards money as more important for other things, such as buying his new partner gifts.

He has stopped going to the bookmakers as a social outlet. Instead preferring to only go in to place his bets and immediately leave to avoid getting sucked in to conversations or extra gambling. He is much happier in his view of his current gambling activities and demonstrates regret at spending so much in the past. He is adamant that he won't return to such high levels of gambling again. He appears to have made changes to his social habits that will facilitate the change.

**Emerging sub-themes:**

Relationship influence.

Gambling less.

Regret.



### **Participant 37 (Male, 31) narrative away from PG**

Demographics;

Age; 31. Sex; M. Relationship Status; Single

Employment Status; Full time Education. Ethnicity; White-White British. Education; 21

Past year gambling activities; 7

Participant 37 (Male, 31) attended three sessions. Their lowest PGSI scoring session was the third session with a score of 0, and the highest was the first with a score of 6.

**Table A4.9 Participant 37 (Male, 31) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	6	5	70	6	14	13
<b>2</b>	6	3	70	3	12	12
<b>3</b>	0	4	40	4	11	17

### **Interview One**

During the first interview, Participant 37 (Male, 31) explains some of their approaches to gambling, of which one of the key standout elements is the use of different activities as means to different ends.

They spend a great deal of time involved in horse race betting, which is fairly planned activity, considered more of a hobby pastime, which is accepted as such when considering how much time and money they spend on it. It is fairly controlled and they follow what they consider certain skills and strategies. They accept overall that they probably lose money, but it is

allowable as a form of entertainment. They play to win, and are motivated by winning, seeing it as a personal achievement in utilising their skill base.

The other aspect of their gambling is predominantly casino or slot machine play, which is generally done in a social capacity and acknowledged as a completely different type of activity. Here they accept that they will lose, almost trying to have a 'blow out', and that it is more to do with spontaneity and almost self-destructive behaviour. This aspect of gambling behaviour they do not enjoy as much, and often regret afterwards and during the interview they explicitly refer to their desire to control it more.

Their commentary on their previous gambling over the years suggests that there has been quite a lot of change throughout their gambling career, and they still do not seem satisfied or content with where they currently find themselves.

### **Emerging sub-themes:**

2 types of gambling.

Organised.

Disorganised.

Binge gambling.

### **Interview Two**

Participant 37 (Male, 31) opens the session stating that they are not aware of any real changes in their behaviour over the previous three-months. They continue to gamble regularly on horse racing, with occasional 'blow out' days at casinos or on slot machines during social evenings out with friends.

They have no memorable wins, and feel that they are probably losing on the horse racing due to the change of season. They claim not knowing the jumping season as well as the flats has

led to a fall in success. However, their horse race betting is generally low stakes, so low wins and low losses. They have lost much larger amounts at the casino, and regret this activity

They continue to make a clear distinction between horse race betting, which they believe is a skilful and valuable pastime, and casino and slot machine betting which is negative and self-destructive. Whilst they recognise the negative elements of this, it is engaged in for that reason, only regretting it afterwards. He associates the casino/slots with escapism, bingeing and loss of control.

There are some personal changes to circumstances which have led to a slight variation in gambling behaviours. Having recently moved in with a partner, this has affected the weekend gambling routine by reducing accessibility.

He continues to have a mixed view of gambling, generally seeing it as positive, when referring to the horse racing. But acknowledging the negative aspects of the binge gambling on casino games and slot machines, which he states he hopes he will not do again over the next three-months.

### **Emerging sub-themes:**

Binge gambling.

2 types of gambling.

### **Interview Three**

During this session Participant 37 (Male, 31) self-reports as a non-problem gambler. During the final session Participant 37 (Male, 31) has made what appears to be a major change in attitude towards his gambling behaviour. Having previously been aware of the differences in his reactions to different types of gambling behaviour he has not engaged in slot machine gambling or casino gambling for most of the past three-months. This is in keeping with his future hopes from the last session.

He has also begun to change his tactics and limits regarding his horse race betting, and begun to spend less money during this type of betting. He feels that this actually enhances his enjoyment as he has less to lose during each bet. Lower expenditure is reflected in the self-report questionnaire, at almost half the previous two sessions.

Participant 37 (Male, 31) is particularly open regarding his previous gambling on slot machines and his dislike of this type of machine. He refers regularly to his loss of control in the past, but only associated with slot machines and fixed odds betting terminals. There is a degree of mistrust at gambling institutions and the ease at which this high stakes money making system can have such a strong effect on people that might already gamble in a responsible way, and yet lose control when introduced to these machines.

Much of the interview is spent in reflection on loss and regret that has been experienced in the past, but he clearly feels he is in a much more controlled and happier place with his gambling. Most of the gambling is social and almost all of it is horse racing where he feels he has knowledge and places bets in a considered way following systems and analysis.

**Emerging sub-themes:**

Control.

Change.

2 types of gambling.

Mistrust of gambling establishments.

### **Participant 53 (Male, 23) narrative toward PG (always PG)**

Demographics;

Age; 23. Sex; M. Relationship Status; Single

Employment Status; Paid Work. Ethnicity; White – White British. Education; 16 Years

Past year gambling activities; 6

Participant 53 (Male, 23) attended three sessions. Their lowest PGSI scoring session was the second session with a score of 14, and the highest was the third with a score of 18. Participant 53 (Male, 23) didn't start gambling until they were in their late teens. Having previously been against it, feeling it was a waste, they began to gamble in social situations at casinos, and after some early wins shared with a partner, and feeling that they were lucky, they continued.

**Table A4.10 Participant 53 (Male, 23) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	15	4	200	10	18	27
<b>2</b>	14	3	300	15	16	22
<b>3</b>	18	3	150	10	18	19

Session 1 placed the participant as a high problem gambler. Participant 53 (Male, 23) appears influenced mostly by money during this first interview. They talk about control and limiting their spending, but are also aware that they can lose control and that they have increased their gambling over the years. They believe that they understand strategies, but that they find themselves losing control and failing to stick to the strategies. There is also reference to disliking certain aspects of gambling.

Most of their gambling is online and time is not a factor they consider when thinking about controlling their behaviour. They have engaged in variety of gambling activities in the past, but the repertoire has narrowed to be almost exclusively online slot machines which they do daily.

As the interview progresses they appear to be influenced by several external factors, including boredom, the gambling environment and promotions. They are also aware that gambling outcomes affect their mood.

### **Emerging subthemes:**

External influences.

Issues with control.

Paradox.

### **Interview Two**

Session 2 placed the participant as a high problem gambler. There is a change of mood apparent during the second sessions. The majority of the participant's talk is regarding negative aspects of gambling, regret at gambling behaviour, reflection over past behaviours and an awareness of lack of self-control, and awareness that they are a problem gambler.

They claim to be making a concerted effort to move away from gambling. The National Lottery is not viewed as gambling. They feel they are making changes, making more effort to control their gambling, placing external restrictions and limits on their accounts and that this is a positive life change along with other aspects of their life such as having a new job which takes up a lot of their time.

They still talk about big wins, and demonstrate losing control and spending their winnings back on gambling, but they are quite open about their losses, admitting that it is a bad place to be. They feel that they 'hit rock bottom' when they had to ask a friend to help cover some bills

and this has been a turning point. They claim to have reduced their gambling activities to almost nothing during the past week, but the self-report measures place them at a higher level of gambling engagement than in the last session.

**Emerging subthemes:**

Mood negative.

Regret.

Paradox.

**Interview Three**

Session 3 placed the participant as a high problem gambler. The majority of the focus of this session in positive movement away from problem gambling. Reference to control and change, an awareness of having a problem that requires help and help has been sought. They appear to have changed their views on aspects of gambling from their utterances, but continue lose control and chase losses with occasions where they are spending more than they think they should.

They refer to having an addictive personality, and have taken steps to cancel online accounts and set restrictions to prevent them from accessing gambling online. They have noticed increasingly a degree of dissociation when gambling, over spending and it has led them to reconsider their gambling and acknowledge that it is destructive.

They also make a clear distinction between online gambling and physical gambling in casinos. They would not allow themselves to hand over actual cash in a casino in the same way that they move digital funds.

**Emerging sub-themes:**

Acknowledging problem gambling. Seeking help.

## **Participant 55 (Female, 37) narrative toward PG**

Demographics:

Age; 36. Sex; F. Relationship Status; Single

Employment Status; Paid Work. Ethnicity; White-White British. Education; 11

Past year gambling activities; 9

Participant 55 (Female, 37) attended two sessions. Their lowest PGSI scoring session was the first session with a score of 6, and the highest was the second with a score of 10.

**Table A4.11 Participant 55 (Female, 37) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	6	5	25	2	17	13
<b>2</b>	10	5	50	2	17	14

## **Interview One**

During the initial session the participant refers to their dislike of gambling as a pastime, and their general mistrust of gambling establishments.

They report instances when they have lost control in the past but only on certain forms of gambling. There is evidence that they consider different types of gambling to provide different types of experiences for them. That they are controlled when it comes to some forms, and completely unable to control their gambling other areas.



With the types that they like, predominantly football and horse racing, they view winning as a personal achievement. Demonstrating knowledge in the sport, and gambling adds interest to sports which they already enjoy.

However, they are fully aware that they have problems controlling their gambling when it comes to online slot machines, and physical Fixed Odds Betting Terminals in shops. Having worked in a bookmakers, they have seen first-hand the destructive outcomes of other people losing money on FOBTs, and have lost control in the past when playing the machines themselves.

They are open and honest about this loss of control and that they have made a concerted effort to overcome their problems. But they make a clear distinction between their sports betting, which has always remained stable and controlled, and the machines and online slots, which have led to complete loss of control.

### **Emerging subthemes:**

2 types of gambling.

Disorganised.

Organised.

Dislike gambling establishments.

### **Interview Two**

This session has a much more negative aspect to it than the previous one. The main topic of conversation is the regret at losing control in the past and reflection on the effects that it has caused in many aspects of the participant's life.

Whilst they acknowledge the differences between their different gambling activities, they have felt that loss of control in one area, and the efforts they are making to overcome this loss of control are requiring them to change their gambling behaviour in all areas. This is

disappointing to them, because even in activities that they once got enjoyment from, they are now no longer seeing as a positive thing.

They are open and very honest about their loss of control and the difficulties that they have got themselves into personally stemming from gambling problems.

They have put several strategies into place to attempt to remove temptation, but they also comment on their desire to still gamble. Indeed, their number of weekly activities has not reduced since the last session, and is above average amongst the cohort, and national averages. This session also sees them spending double what they were spending in the previous sessions past week.

**Emerging sub-themes:**

Regret.

Loss of control.

Making changes to prevent relapse.

Mood bad.

### **Participant 53 (Male, 45) narrative away from PG (within PG)**

Demographics;

Age; 45. Sex; M. Relationship Status; Married or living as Married

Employment Status; Paid Work. Ethnicity; White – White British. Education; 11

Past year gambling activities; 5

### **Summary**

Participant 53 (Male, 45) attended two sessions. Their lowest PGSI scoring session was the second session with a score of 11, and the highest was the first with a score of 13.

They began gambling on arcade slot machines as a child, having access to such machines in the pub where they grew up. However, as an adult they did not begin gambling seriously until their mid-twenties. Their favoured gambling activity is horse racing.

**Table A4.12 Participant 53 (Male, 45) key self-report measures across sessions**

<b>Session</b>	<b>PGSI</b>	<b>Past Week</b>	<b>Money</b>	<b>Time</b>	<b>Dissociation</b>	<b>Fallacious</b>
<b>1</b>	13	2	30	15	17	19
<b>2</b>	11	1	35	6	20	20

### **Interview One**

The first session is dominated by the negative effects of gambling on mood. A strong dislike of gambling as apparent. Several elements are commented on that appear to have a positive affect towards gambling behaviour, such as family influences, friends and the environment promoting easy access to gambling.

There is also a level of acceptance of gambling as an inevitable outcome, and that much gambling is simply for the sake of it, without any real expectation of achieving success or enjoyment. They mostly gamble on their own. They state that they would often go into bookmakers to kill time, whether or not they have money to gamble, and if they do have money they would always find something to place a bet on.

The dominant reason for gambling is dissociation, to escape, and the emotional surge caused by both winning and losing. However, there is a strong dislike of it as an activity.

**Emerging sub-themes:**

Mood negative.

Paradox.

Disorganised.

Dissociation.

Multiple influences.

**Interview Two**

Session 2 placed the participant as a high problem gambler, although the score has reduced. Money has not changed significantly but time has reduced by more than half. During this session there is great deal of focus on losing control, specifically one or two occasions where the participant is quite disappointed in their behaviour. The other two dominant aspects of the narrative are on self-reflection and regret.

However overall they are gambling less, though this is mostly due to lack of money, rather than a conscious effort to reduce gambling activity. There is more discussion of a changing view of gambling, consideration of their past behaviour, and some changes in approach to gambling. They report finding more enjoyment than in the previous session, by actually

placing less money and betting less frequently, mainly because this prevents the degree of loss.

Gambling less he acknowledges, leaves him feeling calmer. He is aware that when he gambles more frequently, it has a negative effect on his mood. When he gambles less frequently he tends to take more time to engage and enjoy the process of gambling when he does do it, he is more relaxed and he feels the quality of the races he bets on are better.

However, he also acknowledges that when he is in a position to increase gambling, either because of financial reasons, or because he has more free time over some upcoming holidays, he fully expects to increase his betting frequency.

He does refer to one particularly regrettable gambling occasion, where he placed a large bet after having some bad personal news. He knows it was just an excuse, but still used the excuse to explain this occasion of problematic gambling. He reports such events as very infrequent, and usually due to looking for some kind of release after a stressful event. He also states that placing riskier bets produces a greater level of 'buzz', and produces a larger emotional surge, either of panic or excitement, even if smaller bets are more logical or potentially profitable.

Overall he is very aware of his struggle with gambling, and the paradoxes between continuing without much control and the overall general dislike of the emotional states he reaches through persistent gambling, even though compared to some other gamblers his spending and time levels are quite moderate.

### **Emerging sub-themes:**

Paradox. Conflict. Mood positive when gambling less.

Dissociation. Changing view on gambling. Influenced by Money.

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